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Partner Certification in a Medium Sized Business Software Company

Master's Thesis

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ABSTRACT OF MASTER'S THESIS

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Abstract

Delivering software via partners adds one additional layer of complexity and uncertainty to the software delivery process. Inappropriate management of the partners could risk the solution implementation and affect negatively to the partner, software provider, and the customer. Certifications are one tool that can be used to manage and control these relationships. It is not clear however when and how certifications should be used in software sales.

This Master's thesis studies how certifications are used by independent software vendors and should they certify their partners. The study starts by defining what are the typical partnership models in business software sales and then investigates different aspects of certification in partnerships. First, the typical certification models are presented, and then factors which potentially affect the decision about certification program implementation are discovered. The study focuses on independent software vendors and, e.g., companies who make customer specific software are excluded. The study is exploratory in nature; thus, the aim is to discover new aspects rather than confirm.

The study discovered that there are four main types of partnership models used by medium-sized companies: co-selling model, sales agent model, value-added reseller model, and OEM model. The models differ mainly on how the responsibility of the software delivery is shared. In co-selling, the independent software vendor is fully responsible for the end customer and the delivery, whereas in OEM model the partner controls the end customer.

It is not clear exactly when a company should start certifying its partners as it depends heavily on the context. The relevance of certification can be evaluated by looking at the partnerships and the certification from four different perspectives: training, quality, governance, and marketing. By using these perspectives this study identifies key questions ISVs face in partnerships and potential factors which can affect the decision of implementing a certification program.

Keywords certification, partnership, software ecosystem, independent software vendor

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Tiivistelmä

Ohjelmiston toimittaminen partnerien kautta lisää toimituksen monimutkaisuutta ja epävarmuutta. Huonosti hallittu kumppanuus voi riskeerata toimituksen onnistumisen ja vaikuttaa negatiivisesti partneriin, ohjelmistotaloon sekä loppuasiakkaaseen. Sertifiointi on yksi työkalu, jota voidaan käyttää hallitsemaan kumppanuutta. Ei ole kuitenkaan selvää, milloin ja miten sertifiointia tulisi käyttää.

Tämä diplomityö tutkii kuinka itsenäiset ohjelmistotalot käyttävät sertifiointia ja pitäisikö keskisuuren ohjelmistotalon sertifioida heidän partnerinsa. Työ alkaa määrittelemällä mitkä ovat tyypillisiä partnerimalleja, joita ohjelmistojen myynnissä käytetään. Sen jälkeen työssä käsitellään sertifiointia, joka alkaa tyypillisten sertifiointi mallien esittämisellä. Lopuksi tunnistetaan tekijät jotka voivat vaikuttaa ohjelmistotalon päätökseen luoda oma sertifiointiohjelma. Työ keskittyy itsenäisiin ohjelmistotaloihin ja siten esimerkiksi ohjelmistotaloja, jotka kehittävät asiakaskohtaisia ohjelmia ei tutkittu. Tämä tutkimus on eksploratiivinen, joten tavoitteena on löytää uusia näkökulmia aiheeseen sen sijaan, että vahvistettaisiin jo tiedossa olevia.

Tutkimuksessa havaittiin, että itsenäisillä ohjelmistotaloilla on myynnissä pääsääntöisesti neljänlaisia partnerimalleja: co-selling malli, sales agent malli, value-added reseller malli, sekä OEM malli. Mallit eroavat toisistaan pääsääntöisesti vastuujaoissa ohjelmiston toimituksessa. Co-selling mallissa ohjelmistotalo vastaa täysin loppuasiakkaasta ja toimituksesta, kun taas OEM mallissa partnerilla on kontrolli loppuasiakkaasta.

Sertifioinnin osalta ei ole selvää, milloin täsmälleen yrityksen kannattaa sertifioida partnerinsa, koska se riippuu vahvasti ympäristöstä jossa yritys operoi. Sertifioinnin kannattavuutta voi arvioida tarkastelemalla kumppanuutta neljästä näkökulmasta: koulutus, laatu, hallinto, ja markkinointi. Tässä tutkimuksessa näitä näkökulmia käytettiin kumppanuuden avainkysymysten ja tekijöiden tunnistamiseen, jotka voivat vaikuttaa sertifiointiohjelman luomiseen.

Avainsanat sertifiointi, kumppanuus, ohjelmistoekosysteemi, itsenäinen ohjelmistotalo

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The journey to this point has been quite long. It has taken me through a vocational school, high school, university of applied sciences, and now it starts to seem that university as well. I have worked as an electronics assembler, electrician and now I work in the software industry as a member of a technical project delivery team. I want to thank all the great people who have supported me so far – there are plenty of you!

In terms of this thesis, I would like to thank Tuomo Pesonen and Tapio Pitkäranta who introduced the topic to me and helped me to get started, Janne Nissi who provided guidance throughout the process, and Paul Lillrank who gave invaluable advice and pointed out many things I would have missed otherwise. Special thanks also belong to my wife, friends, and family who have been there for me even though I have been busy working.

Espoo, February 5th, 2017
Eemeli Palotie

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1 Introduction

1.1 Background and Motivation

Delivering business-critical software via partners adds one additional layer of complexity and uncertainty to the software delivery process. Inappropriate management of the partners could risk the solution implementation as well as affect negatively the partner, software provider, and the customer. This master's thesis studies how partnerships are arranged in software sales and how certification is used. As a result, different partnership and certification models are presented and their purpose in the business software industry is discussed. The results will help especially medium-sized independent software vendors to decide whether certification could give them value and how the certification should be arranged.

The client company for the thesis is a medium sized software company which provides software for supply chain management. From the wide area of supply chain management, the solution and services offered by the client company excel especially in optimizing retail and wholesale supply chains. Recent high growth and expansion to new markets have made the topic of cooperating with partners timely. Building up own organization and relationships in a new country as well as learning the cultural differences can be laborious and expensive. At the same time, the client company's and its solution's good reputation has attracted queries about possible partnerships with different actors in the industry. This has led to a situation where different partners have become a viable and important option for increasing sales and growth.

The thesis is done in parallel while working in one of the first project delivery projects via a partner thus practical knowledge on the topic is gathered at the same time. As the client company has just started to formalize their partner management, the thesis will have an impact on how business partner management will be done in the client company.

From academic point of view, the thesis will contribute to literature about certifying business partners. Even though alliances and various partnerships have been discussed

widely in existing literature, the research about certification has been focused mainly on different third-party certifications based e.g. ISO 9000 or CMMI. There hasn't been much research on if these, or other, certifying models are actually used by medium-sized software companies and why. The thesis will seek to make a contribution towards filling this gap in the literature along with finding a practical approach for certifying business partners.

1.2 Research Problem and Research Questions

Cooperating with partners introduces new challenges for software vendors. The control and responsibility aren't anymore within their own company as the partner can be the one who handles the delivery to the end customer. Moreover, operating with multiple partners and other actors has led to the development of *software ecosystem* (SECO) concept. One of the essential questions there is how to manage these ecosystems and in the context of this study – how to manage the partner and partnerships? One tool that is used for the management is certification. However, it is not clear how exactly software vendors should use certification and if it is beneficial. The aim of this study is to clarify the certification in partnerships and, thus, the research problem is formulated as follows:

RP S*hould medium-sized independent software vendor certify its sales partners and how?*

In order to answer the research problem, it is split into the following 3 research questions.

RQ1 *What types of partnership models are used by independent software vendors in software sales?*

The importance of the first research question comes from understanding the context where the independent software vendors operate in and how the partners are related to the business.

RQ2 W*hat types of certification models are used by independent software vendors?*

Since there are many companies and different types of partners it is likely that there are different types of certification models as well. The model in this case refers to *the object of certification, the requirements for the certificate, certification provider, and certification process*. Answering that question should provide insight into what options there are available and which of those deserve closer observation. Next, it is crucial to find out

RQ3 W*hat factors affect the independent software vendor's decision on implementing a certification program?*

Answering the third question should give out a list of different factors which can be used to evaluate if certification should be used. The research problem and questions are summarized in Table 1.

Table 1. Research problem and research questions

Research problem	Should medium-sized independent software vendor certify its partners and how?
Research question 1	*What types of partnership models are used by independent software vendors in software sales?*
Research question 2	*What types of certification models are used by independent software vendors?*
Research question 3	*What factors affect the independent software vendor's decision on implementing a certification program?*

1.3 Research Objectives

In order to answer the research problem and the research questions the study has following objectives:

O1 Finding out different types of partnership models in software sales and illustrating them with a model such as software value chain, software supply chain, project delivery process, or software ecosystem. Results will be based empirical evidence and literature review.

O2 Finding out different types of certification models, their benefits, costs, and how and why those are used by independent software vendors. The models can include third-party certification programs or vendor specific programs. The results will be based on literature review, interviews and other possible data such as websites.

O3 Creating a model from the gathered evidence which can be used to evaluate if a medium-sized company can benefit from a certification and what kind of certification model to use in that case. The results will be based on the researcher's perception of the gathered evidence.

1.4 Scope of the Research

The scope of the research is limited to independent software vendors which provide software with SaaS model, and to partners which work closely with that kind of software sales or delivery process. Therefore, for example, the end customer perspective is excluded as well as companies which develop and deliver customer specific software. As this is an exploratory research, the results will not comprehensively describe the whole certification scheme in a business software environment and some of the results won't be applicable outside the study's context.

In terms of the certification, the thesis will aim to find the relevant aspects for further evaluation. Therefore, testing the model in practice and improving it is done only on very limited scale. Also, other partnership management related topics such as finding and selecting a partner, contracts, and revenue models will be excluded.

1.5 Terminology

Certification	A process which verifies that a product, service or a system fulfills specific requirements and if the requirements are fulfilled a written assurance is granted.
Governance	Management of a certain object by using a set of mechanisms such as rules, policies, processes, and norms. Governance also includes evaluation and monitoring of processes and managing incentives systems.
Independent Software Vendor	A company that develops and sells software for certain market. The software is not tailored for a specific customer and it is not meant for in-house usage only.
Partnership	A long-term relationship between two organizations. The relationship has a strategical importance.
Partner	An organization with whom the partnership is formed.
Software Ecosystem (SECO)	A set of actors functioning as a unit and interacting with a shared market for software and services, together with the relationships among them. These relationships are frequently underpinned by a common technological platform or market and operate through the exchange of information, resources and artifacts.
Software Vendor	A company that makes software for internal or external customers.

1.6 Structure of the Thesis

The thesis has two main themes which are treated separately throughout the study. The first theme is the partnership models used by ISVs (RQ1) and the second one is certification (RQ2 & RQ3). In chapter 3, the relevant literature is reviewed which is the software ecosystem literature (chapter 3.1) and certification related literature including the theory behind certification (chapter 3.2). Chapter 4 presents the gathered empirical data. The chapter presents only the data as described by the interviewees and, thus, doesn't contain reasoning, analysis, or opinions from the research team. Chapter 5 contains the actual analysis of the gathered data and presents the key findings. A summary and conclusions of the analysis and findings are then presented in chapter 6.

2 Research Methods and Material

2.1 Research Methods

Explorative multiple-case study method was selected as the research method for the thesis as only little was known about the usage of certification by ISVs and the literature about that specific topic was scarce. The main unit of analysis is the partnership models of independent software vendors focusing on the certification aspect of those. The research questions mainly ask "what" which will be approached by finding out why and how certification and partners are used by independent software vendors. As described by Yin (2013) case studies suit well studies that ask *how* or *why*. The research must not need to control the behavioral events, and the research must focus on contemporary events. These selection criteria together with a comparison to other research methods are illustrated in Table 2. It should be noted that the study has the elements of archival analysis as literature plays a fundamental part in the analysis, and also survey since the same semi-structured interview template was used in the four cases of the study.

Table 2. Comparison of different research methods (Yin, 2013)

METHOD	(1) Form of Research Question	(2) Requires Control of Behavioral Events?	(3) Focuses on Contemporary Events?
Experiment	how, why?	yes	yes
Survey	who, what, where, how many, how much?	no	yes
Archival Analysis	who, what, where, how many, how much?	no	yes/no
History	how, why?	no	no
Case Study	how, why?	no	yes

Yin (2013) points out that the main benefit from multiple cases is that together they provide more compelling evidence about the phenomena than a single case, however, the drawback is that multiple-case study usually requires more resources from the research team. In this study, the main reason for selecting multiple-case study was to gather enough evidence for finding different perspectives on the topics, and being able to compare the cases for finding the relevant aspects. A multiple-case study was also

discussed by Eisenhardt (1989). Eisenhardt described the actual process of multiple-case study theory building which usually requires a lot of iteration between the process steps, and comparing the gathered evidence to literature and comparison of the cases. Especially constant juxtaposition of conflicting evidence was seen beneficial as it "tends to unfreeze the thinking". These approaches were used in the analysis part of this study.

Overall this research consisted of three main phases (Figure 1). In the first phase, "Getting started", the relevant research questions and research methods were selected. One of the main objectives was to understand the research topic on adequate level in order to design the appropriate approach for the study. The main information sources consisted of the thesis project team, information available on ISVs' websites, and literature. The second phase, "Prepare, Collect, and Analyze", started by gathering and reading through relevant literature. Based on this, appropriate interview questions were created, initial selection of literature was made, and potential case companies were listed. A pilot interview was conducted which was used to do minor modifications to the interview template. The rest of the interviews were selected, conducted, and evaluated in iterative manner. After the interviews were done a thorough within-case analysis was done. The third research phase, "Analyze and Conclude", started by comparing the cases and crafting the results by iterating between the empirical and literature data. The results were presented to different people within the client company while fine-tuning the results based on the feedback. A summary of the research process is presented in Figure 1.

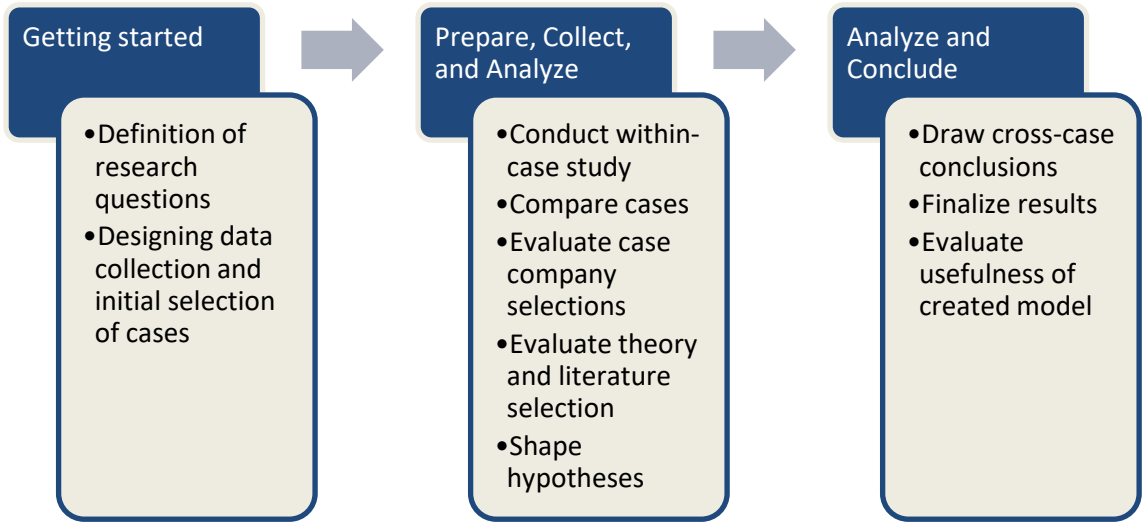

Figure 1. Research process (adapted from Yin (2013: 60) and Eisenhardt (1989))

2.2 Literature Review Research Data and Methods

Literature data collection consisted of two different parts. In the first part, literature about software ecosystems was systematically collected and reviewed. The aim was to get a good understanding of software industry context and the partners. The second part of literature data gathering was a continuous exploration of certification related literature throughout the study.

In the first part, data was gathered from online databases using the keyword "software ecosystem". Online databases that were used were google scholar, science direct, IEEE Xplore, Emerald Insight, Pro Quest, ACM Digital Library, Taylor & Francis, Springer, and Wiley. From these directories, altogether 286 unique articles were selected based on their titles. From these 286 articles, 14 pcs were excluded because the content wasn't available from the sources that was used. The remaining 272 articles were then further evaluated based on their topic and abstract. 60 articles were selected for fine-grained evaluation. These articles were categorized based on their topic into five groups: eco-system characteristics (13 pcs), governance and certification (27 pcs), literature reviews (7 pcs), partner types (6 pcs), and theory (7). In addition, two related books (Jansen, Cusumano and Brinkkemper, 2013; Popp and Meyer, 2010) were reviewed. From the

articles, the most appropriate ones were selected for composing the literature review in chapter 3.1 “Software Ecosystems”. The data collection process is shown in Figure 2.

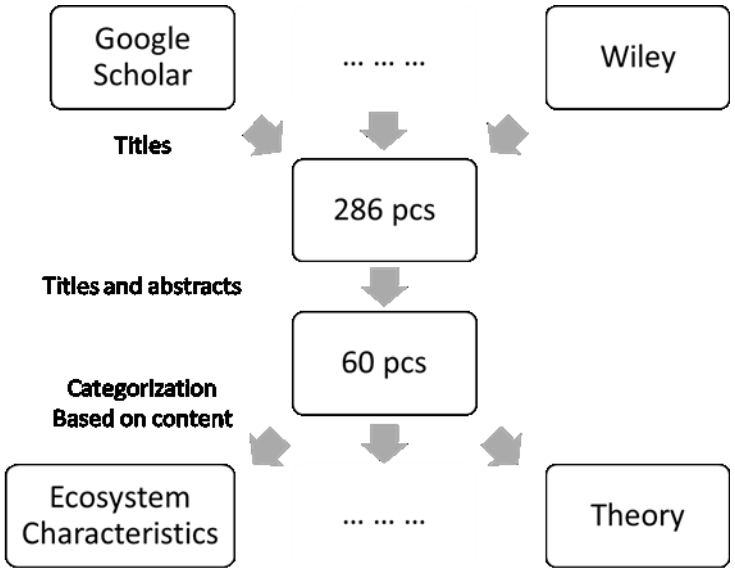

Figure 2. Software Ecosystem literature review process

The second part of reviewing relevant literature had an explorative approach and it continued throughout the study. The main objective was to find out literature that was related to certification. The tactics used here were (1) searching the online databases such as google scholar with relevant keywords, (2) searching for citing and cited by references from the found articles. The used keywords varied widely. The most useful were “certification benefits” and “relational governance”. Also, searching existing master’s theses and dissertations and following their references proved to be a good tactic to find related literature.

2.3 Empirical Data and Methods

The empirical data was gathered from four case companies (Table 3) with semi-structured interviews (Appendix 1). Semi-structured interviews allowed concentrating on certain themes but made it possible to take advantage of exploring other possible interesting aspects during the interviews. The interviews had three main themes as can be seen from Appendix 1: The company, Partners, and Certification. The aim of the company theme was to understand the context of the company where it operates and possible

reasons behind their current situation. Partners theme was intended for addressing the RQ1 and the certification theme for addressing RQ2 and RQ3.

The main selection criteria for the cases were (1) availability, (2) size of the company and (3) indication of certification usage. First, a list of potential companies was gathered from the internet. Main selection criteria for the listing was that they had to have operations in Finland so the likelihood of getting an interview would be higher. From these companies, four were selected for interviews based on their size and potential mentions of partners and certifications on their website. Two of the interviews were got mainly with the help from research team's contacts. All the interviews were face-to-face interviews and lasted for one hour.

Table 3. Case Companies

Case Company	Interviewed Person	Company Size	Month/ Year
Case 1: Micro Partner (MP)	CEO	2-4 employees	10/2016
Case 2: Small Software Vendor (SSV)	CEO	50 employees 5 M€ revenue	10/2016
Case 3: Medium Software Vendor (MSV)	Manager of International Operations	few hundred employees tens of millions of € revenue	10/2016
Case 4: Big Software Vendor (BSV)	Sales Director	1600 employees 140 M€ revenue	10/2016

All the interviews were recorded and transcribed. For transcription, website http://otranscribe.com/ was used (the audio file stays on the local computer and is not transferred over the internet). After the transcription, the transcribed text was copied to qualitative data analysis software (QDA lite) in which relevant aspects were tagged and additional notes were made. First, the cases were tagged separately after which they

were compared and the tags were unified. Tags were used to find common and differing patterns from the interviews. Finally, four major themes were recognized that were closely related to the certification: training, quality, governance, and marketing. These are discussed in the analysis chapter (chapter 5) along with the related main findings from the interviews and literature.

3 Literature Review

The literature review starts by describing the context where software companies operate (chapter 3.1). This is done by using software ecosystem literature which also gives appropriate tools and material for answering the first research question. Next, literature about certification is presented. First, certification is defined and then literature findings of about certification models, their benefits, and costs are presented (chapter 3.2.2). Literature review about certification concludes into a theoretical perspective about it which is based on transaction cost economics theory (chapter 3.2.3). The last chapter seeks to answer the research questions 2 and 3 (chapter 3.2.4).

3.1 Software Ecosystems

In this chapter, the concept of software ecosystems is introduced. These are important because it enables understanding and modeling the context where software companies operate. Especially when it comes to partners it helps to illustrate the position and type of partners and partnership models. The chapter starts with defining a software ecosystem (SECO) and proceed to present different scopes of it and how software ecosystem could be modeled or visualized. After this, it is discussed how different authors have illustrated the partners in software ecosystems.

3.1.1 Software Ecosystem Definition

There are a few differing definitions for software ecosystems (Bosch, 2009; Jansen, Brinkkemper and Finkelstein, 2013; Manikas and Hansen, 2013; Manikas, 2016). The reason for that might be that the research subject is still relatively new. One illustration of the newness of software ecosystem concept is that its foundation lays (Barbosa and Alves, 2011) in the work of Moore (1993), and Iansiti and Levien (2004) who describe business from a biological ecosystem perspective. From the differing definitions, the one used by Jensen, Finkelstein and Brinkkemper (2013) was found to be the most accurate in the context of this study:

> *"**Software ecosystem:** a set of actors functioning as a unit and interacting with a shared market for software and services, together with the relationships among them. These relationships are frequently underpinned by a common technological platform or market and operate through the exchange of information, resources and artifacts."* (Jansen, Brinkkemper and Finkelstein, 2013: 29)

The main reasons for selecting this definition is because (1) it states that SECO is a set of actors instead of for example *interaction* (Manikas, 2016) or *software solutions* (Bosch, 2009), and (2) it doesn't include a sub-concept that needs to be further clarified, e.g., ecosystem (Bosch, 2009; Manikas, 2016).

3.1.2 Software Ecosystem Scope and Modeling

Software ecosystem (SECO) can be studied on a few different scopes which each have their own focus areas. Boucharas, Jansen and Brinkkemper (2009) have divided these scopes into three levels (Figure 3). At the scope (a), the software supply network scope, the main focus is on software vendor, it's suppliers and customers. Potentially also partners would belong into the scope even though it is not explicitly pointed out. The objects of study at this scope would be actors and their relationships. On the next scope (b) the objects of study are Software Supply Networks and their different relationships. And on the scope (c) objects of study are software ecosystems themselves and the relationships among them.

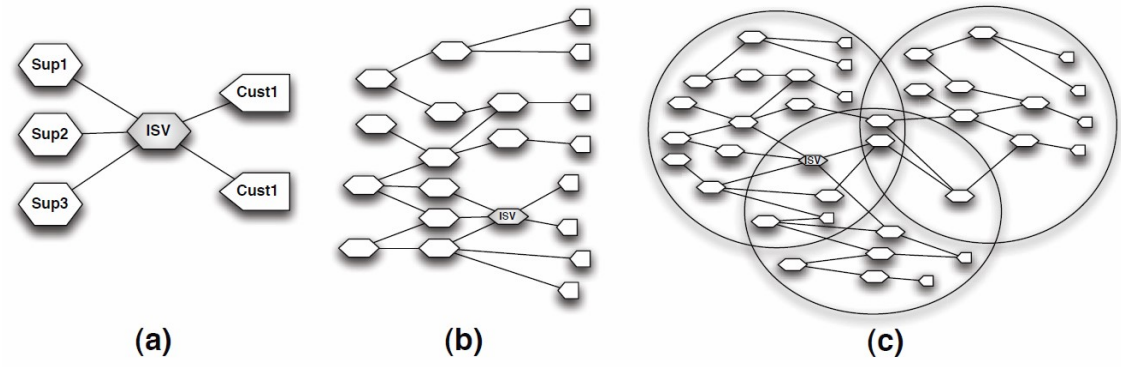

Figure 3. Software ecosystem scope levels (Boucharas, Jansen and Brinkkemper, 2009)

Depending on the selected scope it might be relevant to differentiate different parts in it. For example, van Angeren et al. (2013) studied associate models on software supply network scope (a. in Figure 3) and divided the supply network into supplier ecosystem, partner ecosystem, and customer ecosystem.

On each of the scopes, different kind of challenges exists for software vendors (and of course for other actors also even though that is not covered here). A few key challenges in software ecosystems were discussed by Jansen et al. (2009). On software ecosystem level one of the identified challenges was developing policies and strategies within SECO for SECO orchestration. These policies and strategies could be things such as activities, guidelines, standards, and actions that are used to influence the software ecosystem. Also, certification falls into this category as it can be used affect the actors in the SECO. When software supply network scope is considered one of the challenges identified by Jansen et al. (2009) was managing quality. In that specific case, and throughout the software ecosystem literature, quality has been connected to product-related aspects such as plugins or components (Axelsson and Skoglund, 2016). However, it must be emphasized that managing service quality is also an important part of software ecosystem quality management. Especially in B2B contexts where services might form a major part of the customer value.

Software ecosystems can be modeled with different techniques. The main reason for modeling them is to (1) gain insight e.g. about key actors, (2) analyze the ecosystem, and (3) compare the ecosystems. Typically, three types of modeling techniques have been used by researchers. These modeling techniques are social network models, supply chain models, and goal model (e.g. i*). These models are illustrated in figures 4-6. (Jansen, Handoyo and Alves, 2015)

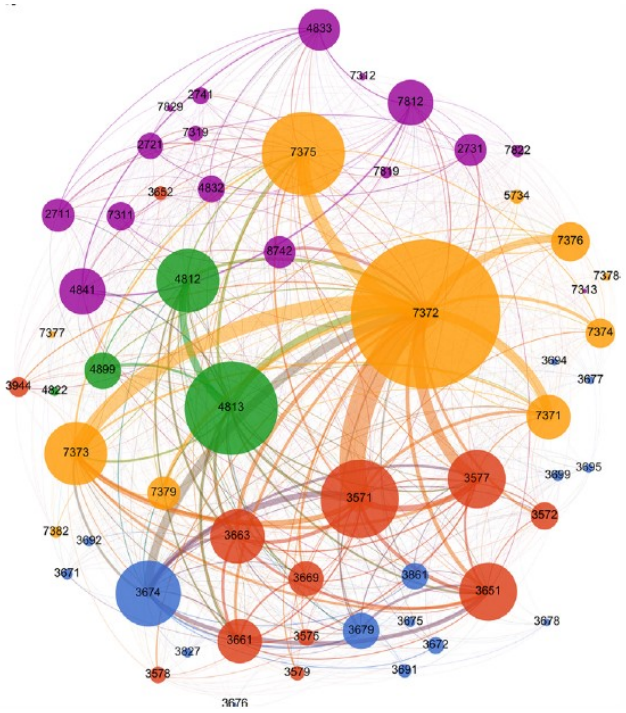

Figure 4. Example of social network modeling of SECO (Basole, Park and Barnett, 2015)

The social network model is seen as a fitting overlay for software ecosystems (Jansen, Handoyo and Alves, 2015). They can be used for example to get an overview of what software vendor's ecosystem looks like and who could be the key actors e.g. in terms of biggest revenue or number of connections.

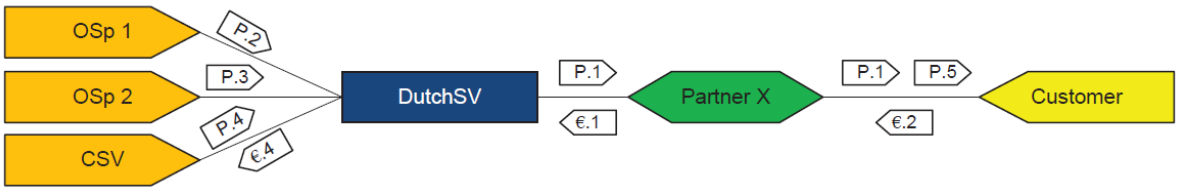

Figure 5. Example of supply chain model of a SECO (Boucharas, Jansen and Brinkkemper, 2009)

Supply chain model can be used to illustrate different actors and flows between them. The flows could be for example knowledge, products, services or money. (Boucharas, Jansen and Brinkkemper, 2009)

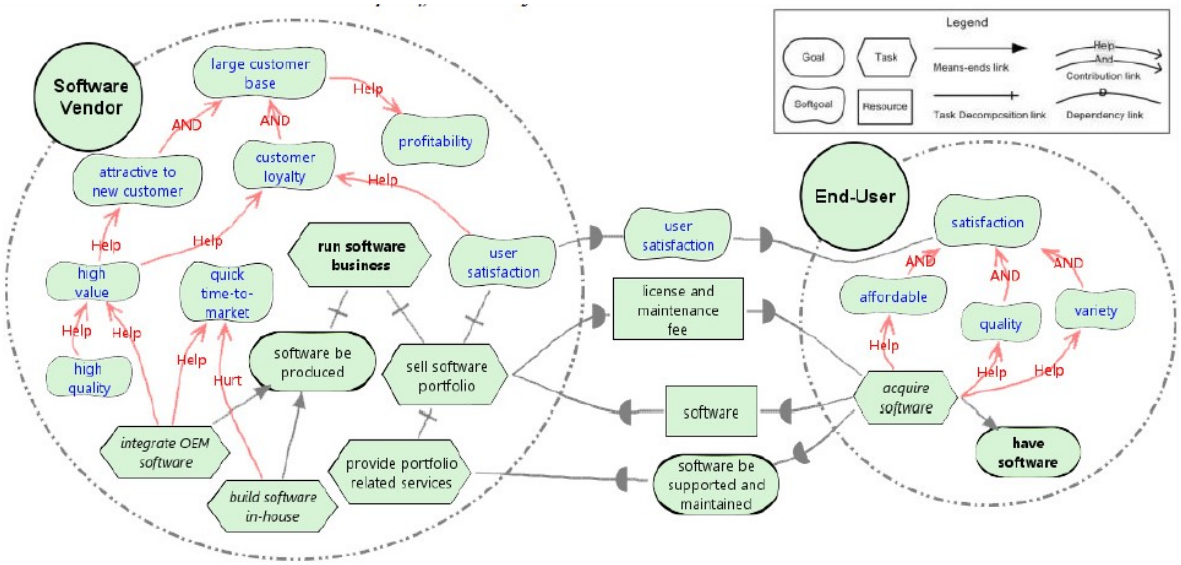

Figure 6. Example of a goal model (i*) of SECO (Yu and Deng, 2011)

Goal model, such as i* in this case, is used to illustrate organizational goals. For example, in Figure 6 the goals of a software vendor are linked to the goals of end-user via various tasks, resources, and secondary goals (e.g. satisfaction). The relationships between these are also drawn to the model which allows finding dependencies between different objects. As an example, use case Yu and Deng (2011) used the model to analyze how open ecosystem business model would differ from traditional software supply chain model. Even though the model could be useful in some cases, Jansen, Handoyo and Alves (2015) point out that only a few have been able to use the model well and it might need simplification in order to comprehend the scale and complexity of software ecosystems.

3.1.3 Partners in Software Ecosystems

Partners are used quite extensively in the software business and there are multiple different types of partners. Roughly the partners can be categorized depending on their position in the value chain: technology partners in the upstream, and sales and implementation partners in the downstream. This is illustrated in Figure 7 below. It should be noticed that the terms used in Figure 7 are not the best possible since suppliers can be considered as partners as well.

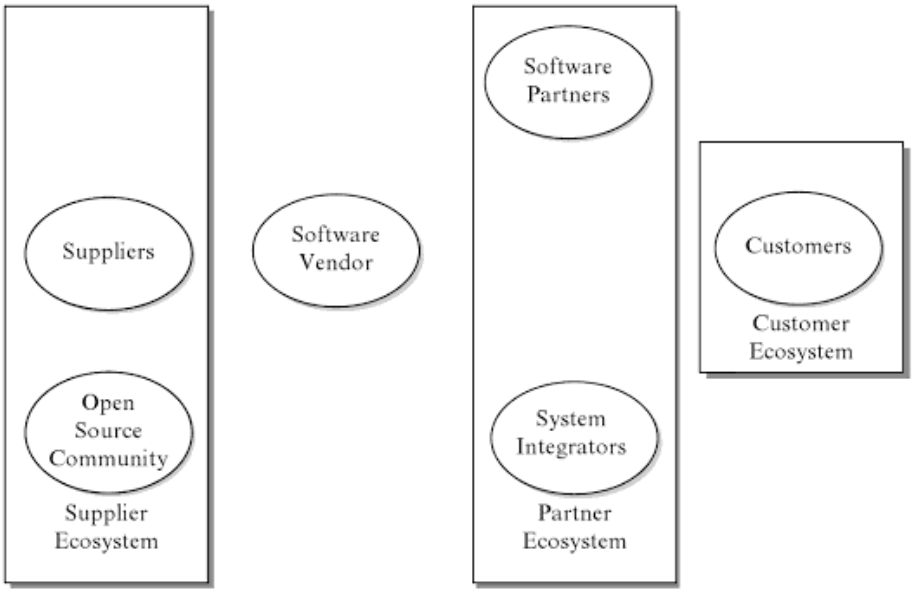

Figure 7. Rought categorization of software vendor's partners (van Angeren et al., 2013)

The partners in the software vendor's ecosystem have been studied by a few authors. Andresen, Brockmann and Dräger (2013) studied what kind partners different ERP providers have. They found out that distribution partners are used by over 70 % of the companies and next three the most commonly used partner types were business consultants (55 %), system integrators (45 %), and IT support providers (39 %). They executed a survey from which they identified five different types of ecosystems each of which had their own distinct characteristics and partners. As a key part of the analysis, they used a framework which shows potential relationships between the partner types (Figure 8). Even though this framework was in the central role there wasn't a clear explanation what are the exact differences between these actors and on other hand why some of them are considered as partners instead of e.g. suppliers.

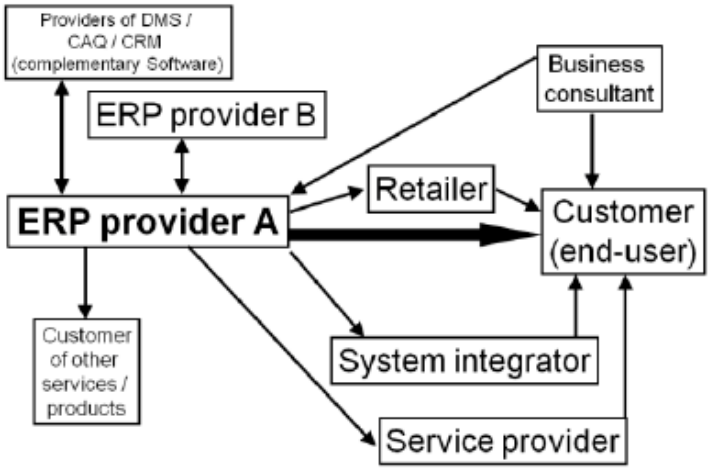

Figure 8. Potential actors and their relationships within a software ecosystem (Andresen, Brockmann and Dräger, 2013)

Similar kind of partner type identification was done by Popp and Meyer (2010). They used 10 different characteristics to discuss the differences between the typical partnership models in the software industry. The typical partnership models they discussed were reseller, resell by system integrator, revenue share, referral program, online partner solution marketplace, OEM, certified interface partnerships, and software development co-operations. Despite the usage of the 10 different characteristics the distinction wasn't very clear. For example, "revenue share" model better described how the revenue is shared between the partners when other mentioned models were defined through the responsibilities of the partnership. In other words, reseller or system integrator could share part of the revenue from the customer which would effectively make it a "revenue share" partner as well. Also, it was not clear why the "certified interface partnership" was raised as its own partnership model since it seems like system integrator model seems to capture that on sufficient level.

In addition to the above partnership models and partner types, value-added reseller is frequently used term in literature and in practice (Niu, 2009). As described by Niu (2009), *"value-added reseller is a company that adds some feature(s) to an existing product(s), resells it (usually to end-users) as an integrated product or complete 'turn-key' solution."* As can be seen, it is not clear how exactly value-added reseller relates to the other part-

nership models or partner types presented earlier. For example, are all system integrators value-added resellers and what differentiates OEM model from value-added reseller model?

An approach to clarify the above ambiguities was taken by van Angeren et al. (2013). They developed a conceptual overview of associate models used in software ecosystems (please see Appendix 2). As a central part of the of the model, they showed that an organization can have multiple roles within the partnership. So, a company could take the role of selling the software as well as providing additional services. The actual roles have been discussed for example by Handoyo, Jensen and Brinkkemper (2013) and Floerecke and Lehner (2016). In order to, illustrate the usage of the model consider for example the following statement: "A system integrator (a company) resells (a role) software vendor's product and offers additional services (a role) such as integrations and support to the end customer. This system integrator, therefore, has a value-added reseller relationship with the software vendor (partnership model)." Here the system integrator is framed as a company, whose main business is to integrate software solutions. The system integrator fulfills a reseller role and a service provider role. The partnership model used here is called "value-added reseller relationship". These questions and more precise definitions of partner types and partnership models are explored as a part of research question 1.

Based on the literature six partnership models were identified which also serve as a partial answer to the first research question (RQ1: *what types of partnership models are used by independent software vendors in software sales?*):

- reseller and value-added reseller model
- support partner model
- referral program
- online partner solution marketplace model
- OEM model
- software development co-operation model

3.2 Certification

This chapter provides an overview of certification and related key aspects of it. The chapter starts by defining what certification actually is. Next, relevant certification types are discussed along with benefits, costs and how certificates are used.

3.2.1 Definition of Certification

Different authors have a slightly different viewpoint to certification and often there isn't explicit definition for it. For example, Gantz (2013) describes that certification process is almost always performed by a third-party auditor and the context is tied tightly to quality related aspects. Some other authors, however, have discussed only internal certification programs provided by a software vendor itself (Jansen, Brinkkemper and Finkelstein, 2009; Popp and Meyer, 2010). The object of certification can vary similarly. Some certifications are intended for certifying organizations when others certify people, processes, or products (Heck, Klabbers and van Eekelen, 2010; Gantz, 2013).

When it comes to explicit descriptions of what certification means, common aspect can be identified. For example Heck, Kalbbers and van Eekelen (2010) described it as follows: *"If a product receives certification, it simply means that it has met all the requirements needed for certification."* In similar fashion, International Organization of Standardization (2016a) have defined certification as "Certification – the provision by an independent body of written assurance (a certificate) that the product, service or system in question meets specific requirements." Based on the reviewed literature three important aspects of certification were identified which were used to define the certification: (1) certified object can vary, (2) the object needs to fulfill specific requirements, (3) a written assurance is granted if the object fulfills the requirements. These three aspects were combined into the following definition which is used throughout this study:

> "Certification is a process which verifies that a product, service or a system fulfills specific requirements, and if the requirements are fulfilled a written assurance is granted."

3.2.2 Certification Types, Benefits, and Costs

There are multiple different certifications available. The usage of these depends on the context and motives of the company who wishes to achieve such certificate. The main dimensions that differ between certifications are the provider or maintainer of the certificate, the object of the certification, and the requirements of the certificate. In general, certificates can be categorized into three distinct groups: first-party certificates, second-party certificates and third-party certificates (Boegh, 2006). First-party certifications are those where the owner of the certified object assures the conformance to the requirements, e.g., supplier assures the quality of its product. In the second-party model, the buyer is the one who gives the assurance, and in third-party model, it is an independent organization. Another type of categorization criteria that is used is functional categorization. These are for example product certificates (Heck, Klabbers and van Eekelen, 2010; Alvaro, Almeida and Meira, 2007) and profession certificates (Rodríguez, Fernández and Torres, 2011; Ray and McCoy, 2000; Koziniec and Dixon, 2001; Fleischman, Meyer and Watson, 2011; Weeden, 2002). In this chapter follows the categorization used by Tarnacha (2008): third-party certifications and certifications in a supply chain, as those are the most relevant in this study's context. It must be noted that those two categories partly overlap since third-party certificates can also be used in supply chains.

Third-Party Certifications

Third-Party certifications are those that are maintained by a third-party and often granted by an independent organization. Probably the best-known example of third-party certifications are the compliance certifications with ISO standards. These standards are maintained and developed by International Organization of Standardization (ISO) and organizations can seek a certification to some of these standards. The certificate is granted after external certification body has assessed the object of the certification. ISO standards can be used to certify a few different things. For example, ISO 9001 (requirements of a quality management system) and ISO/IEC 27001 (information security management) are standards that are certified on an organizational level. In the case of ISO/IEC 27001, the actual objects that are assessed are people, processes, and IT systems. (ISO, 2016a; b)

In addition to ISO standards, which are rather general, there are several IT specific standards. CMMI (*Capability Maturity Model Integration*) and TickIT Plus are one of these. CMMI is a model which can be used to evaluate organization's processes' maturity. There aren't any direct CMMI certifications but the processes can be *appraised* following the framework (CMMI institute, 2016). This appraisal is executed by a person who has a certification to do it. TickIT Plus differs from CMMI approach. TickIT Plus could be described as an implementation or application of ISO 9001 with added content (JTISC, 2016). Similarly, as ISO 9001 it is an organization level certification model. The CMMI and TickIT Plus together with a few other IT certification models have been discussed in detail by Ruikka (2009) and Gantz (2013).

The benefits of this kind of certifications, especially ISO 9000 series, has been studied widely in the literature. Despite the rather extensive studies, the results are partly contradictory as those are often derived from opinions and perceptions (Sampaio, Saraiva and Rodrigues, 2009). The benefits can be categorized into two main categories: internal benefits and an external benefit (Casadesus, Giménez and Heras, 2001; Gotzamani and Tsiotras, 2002; Jones, Arndt and Kustin, 1997). Internal benefits are for example productivity improvements and product quality improvements, whereas external benefits could be corporate image improvement and customer relationship improvements. A summary of the most commonly stated ISO 9001 certification benefits in literature is presented in Table 4.

The benefits company achieves from certification seems to depend on the reason, or motivation, why the company seeks to be certified (Gotzamani and Tsiotras, 2002; Jones, Arndt and Kustin, 1997; Poksinska, Dahlgaard and Antoni, 2002; Terziovski, Power and Sohal, 2003; Sampaio, Saraiva and Rodrigues, 2009). The results from different studies suggest that when company's motivation is external, the benefits tend to be external as well and similarly with internal benefits. In addition, it seems that internal motivations lead to higher overall benefits (Gotzamani and Tsiotras, 2002; Terziovski, Power and Sohal, 2003). It should be also noted that acquiring a certificate is sometimes a "necessary

evil" required for operating on the market. This kind of requirements could span from customers or laws and regulations (Sampaio, Saraiva and Rodrigues, 2009; Gantz, 2013).

Table 4. Most commonly stated ISO 9001 certification benefits reported in the literature (Sampaio, Saraiva and Rodrigues, 2009)

External benefits	Internal benefits
Access to new markets	Productivity improvements
Corporate image improvement	Product defect rate decreases
Market share improvement	Quality awareness improvements
ISO 9000 certification as a marketing tool	Definition of the personnel responsibilities and obligations
Customer relationship improvements	Delivery times improvements
Customer satisfaction	Internal organization improvements
Customer communication improvements	Nonconformities decreases
	Customers' complaints decrease
	Internal communication improvements
	Product quality improvement
	Competitive advantage improvement
	Personnel motivation

Certification doesn't come without costs. A couple of the most significant cost components attached are documentation and overall effort required to achieve the certificate (Casadesus, Giménez and Heras, 2001; Leung, Chan and Lee, 1999; Poksinska, Dahlgaard and Antoni, 2002). One study reported that getting an ISO 9000 certificate could take 6-18 months and take at least one person full time for this period in addition to which external consultants are required for doing the audits (Nwankwo, 2000). The high costs could lead to a situation where the overall value of certification is negative rather than positive. This kind of phenomena was observed by Leung, Chan and Lee (1999) when they studied the costs and benefits of achieving ISO 9000 series certification. They confirmed that company's motivation had an effect on the certification benefits but motivation didn't explain cases when certification value was negative. For future research, they suggested finding factors that lead to certification costs to be higher than benefits.

One possible factor found from the literature was company's existing good quality system. If the quality controls are already on good level, then the standard would only add costs, delays and burdensome documentation (Juran 1999, cited in Terziovski, Power and Sohal, 2003). Other factors could be sought by looking at differences between industries as Leung, Chan and Lee (1999) found that building and construction sector had more discontent about certification than manufacturing and service sectors.

The literature contains some hints on certification system flaws. Dick (2000) noticed it is possible that sometimes certification can be achieved too easily by those companies who just want the badge. These companies implement only the minimum requirements or even could fake the compliance to the requirements. This would imply that the certification systems are subject to adverse selection. Another flaw pointed out in literature is that standard based certifications tend to shift company's focus to documentation and compliance instead of actually improving the processes and creating customer value (Dick, 2000; Gotzamani and Tsiotras, 2002). The excessive bureaucracy and additional workload caused also disappointment and resentment among employees.

Partner and Supplier Certification

Partner and Supplier certification are those that organization requires from its partners or suppliers. These certification programs can be maintained either by the organizations participating in the relationship (i.e. second-party) or by a third-party as discussed in the in chapter "*Third-Party Certifications*". The aim of this chapter is to present how third-party certificates and second-party (i.e. vendor specific) certifications are used in supplier and partner relationships.

In buyer-supplier relationships, certifications are often linked to quality aspects. Buyer has certain criteria which it needs their supplier or supplier's products to fulfill in order to ensure end products quality. Verifying the fulfillment of the requirements can be done e.g. with certification. This kind of models are discussed for example by Lockhart and Ettkin (1993). They describe supplier (or vendor) certification as follows:

> *"Vendor certification is one such tool that can help a company improve its competitive edge. Vendor certification involves the thorough examination of all aspects of a vendor's performance, resulting in the assurance that the vendor's products will consistently meet expectations of the buyer."*
> (Lockhart and Ettkin, 1993)

Lockhart and Ettkin (1993) describe that certificates help the buyer because the quality is then "manufactured in" the product so the buyer doesn't need to do additional quality verification of the materials and components when the buyer receives those. In addition, requiring a third-party certification from a supplier would reduce the costs by minimizing paperwork and duplication of labor from the buyer side. An alternative approach for the certification could be for example to inspect all the products. The theoretical basis for selecting between these two methods have been discussed by, e.g., Hwang, Radhakrishnan and Su (2006).

Quality is not the only aspect that should be considered in certifications. Software Ecosystem (SECO) literature has recognized that certification acts as an entry barrier to the ecosystem (Jansen, Brinkkemper and Finkelstein, 2009; Jansen and Cusumano, 2013). Certification is one of the orchestration techniques that can be used to shape the ecosystem, i.e., affect which actors participate in the ecosystem. As an illustration, Jansen, Brinkkemper and Finkelstein (2009) pointed out that sometimes it can be easy to join the ecosystem just by adding one's application to the marketplace (e.g. Google's Android Market), and sometimes it could be difficult and require thorough certifications (e.g. SAP preferred component program). The benefit of the entry barriers would be that the quality of the ecosystem rises (Jansen and Cusumano, 2013). This kind of entry barriers and their implications were studied by Tarnacha (2008) in his dissertation. Even though certification would help to increase the quality in the ecosystem, it could also be harmful if the key actor (or keystone as SECO literature tends to call them) imposes too confining regulations (Jansen, Brinkkemper and Finkelstein, 2009). This could be one explanation for the fact that certain companies have levels in their partnership program,

each level imposing more strict requirements for the partner and also granting better benefits as well (Wareham, Fox and Giner, 2014).

Certifications can be also used to enhance the relationship between the partners. For example, Chang et al. (2015) studied the connection between partner interaction, certification and relationship quality. They found out that intention to implement a certificate had a positive impact on company's relationship with its partners. The certification was seen as an investment that is made for improving the relationship with the partners. The mechanism Chang et al. (2015) mentioned here was that if a certificate was required from a partner, a partner could gain trust and commitment by acquiring it. A similar effect was discussed by Larson and Kulchitsky (1998) when studying supplier performance and relationships in the context of single sourcing and supplier certification. They mentioned that in single source suppliers must be selected with utmost care, thus, certification is a logical step towards granting a supplier single source status. Certification can also be viewed as a long-term supplier development program where mutual trust and commitment is needed and the partner relationship plays an important part (Lockhart and Ettkin, 1993; Park, Reddy, Shin and Eckerle, 1996).

3.2.3 Theoretical Perspective to Certification

So far, literature about software ecosystems, software ecosystem modeling, and partners have been presented. Then certification was defined and third-party certificates along with supplier and partner certifications were discussed. One major area, however, is still lacking – theoretical insights about certification and what is certification's position as a governance tool. These will be discussed in this chapter.

The theoretical perspective of certification in literature is tightly bound to transaction cost economics (e.g. Williamson, 1979). Transaction cost economics analyses the transactions and aims to explain how certain transaction is made based on cost minimization. Moreover, the transactions can take place in markets or within an organization, but also hybrid forms of these exist such as partnerships (Douma and Schreuder, 2013). Another central theory used in governance literature is agency theory. Agency theory investigates the relationship between two people – a principal and an agent who makes the

decisions on behalf of the principal (e.g. Ross, 1973). One of the main objectives of these theories is the design of optimal contracts by addressing the relationship challenges appropriately. Kuhlmann (2012) discussed these in the context of IT outsourcing and listed what kind of contractual mitigation strategies exist in the outsourcing relationships (Table 5).

Table 5. Relationship challenges and mitigation strategies (Kuhlmann, 2012)

Challenge	**Contractual Mitigation Strategy**
Opportunism Information asymmetry	Goal alignment (reduces reasons for opportunism) • Rewards incentivize beneficial behavior • Penalties reduce payoff from harmful behavior • Long-term contracts protect against short-term profit optimization Monitoring (detects opportunism, creates transparency) • Performance standards and benchmarks • Difficult to identify non-influenceable environmental conditions
Different risk preferences	• Align preferences through incentives • Risk and profit sharing
Uncertainty	• Difficult to mitigate as contracts can hardly specify all contingencies • Partly compensable through contingency provisions • Partly compensable through costly specification

The main traction point for certification in the presented challenges and contractual mitigation strategies is the monitoring. Certification can be used to monitor the partner by assessing partner's competence, thus, it reduces information asymmetry and creates transparency. For understanding how it exactly works as a monitoring tool it needs to be observe it via control framework presented by Jaworski (1988).

Controls can be categorized into formal controls and informal controls (Table 6). Formal controls are *"written, management-initiated mechanisms that influence the probability that employees or groups will behave in ways that support the stated […] objectives."* (Jaworski, 1988: 26) Informal controls are *"unwritten, typically worker-initiated mechanisms that influence the behavior of individuals or groups"* (Jaworski, 1988: 26). The formal controls are separated further into three subgroups depending on their timing in a process. *Input* control concerns measurable actions taken by the firm prior to an activity. These could be for example selection criteria, recruitment and offering training programs. *Process* controls focus on controlling the behavior or actions within a process, e.g., the employee should follow certain steps within a process. *Output* control is used to measure the actual output of the process. (Jaworski, 1988)

Table 6. Control Mechanisms (Jaworski, 1988)

Formal Controls	• Input • Process • Output
Informal Controls	• Self • Social • Cultural

Similarly, as formal controls, informal controls have been divided into three subgroups. These depend on the aggregate level of the organization where this control exists. *Self-control* is where individual establishes their personal objectives, monitors their attainment, and adjusts behavior if needed. *Social* control stems from small groups. Here the group establishes certain norms, monitors conformity, and takes action when a social deviation occurs. Example actions for attempting to get the behavior back on course are things such as humor, kidding, or hinting. If the norms are violated repeatedly then more extreme actions could be taken such as ostracism. *Cultural* control involves the entire division or firm. It is the broader values and normative patterns that guide employee behavior. The cultural control is realized by the slow accumulation of organizational stories, rituals, legends, and norms of social interaction. After the individual has internalized the organizational goals the acculturation period is over. (Jaworski, 1988)

When the control mechanisms are reflected to the certification it can be noted that certification is part of the formal controls. Moreover, certification can be used in all forms of the formal control. It acts as an input control when it is used to verify e.g. person's competence. Several third-party certifications verify the conformance of a process to the given requirements which make it a process control. And product certificates which assure that the product fulfills the requirements are output controls. These of course depend on the viewpoint of one who uses the certification as one company's output control (certification) can be the other company's input control. From a transaction cost economics perspective, this would help to reduce the transaction costs as the inspection can be done only at one place.

It is not enough to settle for inspecting certification as control method since its meaning depends on which stage of the partnership it is used. Alborz, Seddon and Scheepers (2003) separated IT outsourcing process into three steps: pre-contract stage, contract stage, and post-contract stage. From these especially pre-contract and post-contract stages have significance to certification. In pre-contract stage, the focal company executes due diligence which consists of supplier (or partner) selection and evaluation, and potentially also supplier development (Alborz, Seddon and Scheepers, 2003). At this stage, certification can be used to set the entry criteria for further evaluation or to the contracting stage, i.e., certification is input control. This is also mentioned in software ecosystem literature and referred as an "entry barrier" for the ecosystem (Jansen, Brinkkemper and Finkelstein, 2009; Jansen and Cusumano, 2013). Theoretically, both the third-party and second-party certifications can be used in the pre-contract stage. From transaction cost perspective, the third-party certificate is more appealing for the buyer as they don't need to carry the direct costs of upkeeping the certification program or evaluating the conformance to the certificate.

In the post-contract stage, the meaning of a certificate changes. It is no longer an input control but it is used as process or output control. As pointed out while discussing partner and supplier certificates some authors tend to think certification as a long-term supplier development program giving appropriate structure and binding both parties into

continuously developing their operations (Lockhart and Ettkin, 1993). So, the purpose of certification changes from being a cut-off requirement from buyer side to a tool used for improving and developing mutual operations.

One last thing that wasn't yet address is the selection between these different control methods – which is also a central topic in this study. First, as it turns out, organizations use a mix of different control methods for achieving the desired results. This has led to some authors to use a term "control portfolios". For example Soh, Chua and Singh (2011) used control portfolio term while studying the control in information systems projects with multiple stakeholders, and Harmancioglu (2009) connected it to new product development while hypothesizing product modularity to substitute control mechanisms. Another stream of literature has focused on the interplay between contractual and relational governance which both can be directly linked to the formal and informal controls. Some authors have argued that these two governance types are substitutes while others regard them as complements. This specific issue was also addressed by Cao and Lumineau (2015) who found out a set of moderating factors which affect the interplay of the two governance types. Also, the effectiveness of these two types vary, e.g., against the volatility of the environment and ambiguity (Carson, Madhok and Wu, 2006). The main implication is that the appropriate mix of contractual and relational governance depends on the context.

The appropriate governance type selection also depends on the type of exchange organizations are involved. Gereffi, Humphrey and Sturgeon (2005) identified there to be five different types of governance approaches used in global value chains. They argued that selection between these five types depends on the complexity of the transaction, ability to codify transaction, and on capabilities in the supply-base (Table 7).

Table 7. Key determinants of global value chain governance (Gereffi, Humphrey and Sturgeon, 2005)

Governance type	Complexity of transactions	Ability to codify transaction	Capabilities in the supply-base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low
Modular	High	High	High	↕
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	Low	Low	High

3.2.4 Potential Certification Models for Independent Software Vendors

The research question 2 was "*what types of certification models are used by independent software vendors?*". The literature revealed three types of certification models – third party, second party, and first party certifications. From these, third party and second party seemed to be the most suitable for medium sized independent software vendors.

The factors that seemed to affect companies to implement a certification program or acquire a certificate (RQ3) were divided to internal and external motivations. Main internal motivations were quality, performance, and governance related aspects. Quality and supplier performance themes were present in both third-party and second-party models. The main factors in these two seemed to be company's motivation to improve its or partner's operations by e.g. achieving better service and quality levels, or reducing costs. From governance side, the main factors that seemed to affect the decision about certification were ensuring suppliers competence, controlling quality, and monitoring requirements. The main external motivations were requirements stemming from the customer, corporate image improvement, access to new markets, and using the third-party certificate as a marketing tool. As an opposite side, the literature recognized main costs of certification being the effort required to achieve and upkeep it, excess documentation, and focus shifting to non-value adding activities.

4 Case Studies

This chapter presents the empirical data that was gathered via interviews. Altogether four interviews were done and each of those are separated into their own sub-chapters. The motive for selecting these four companies as cases were to gather evidence from different sizes of companies. The chapters don't include any analysis or reasoning, but only represent what the interviewees have described. A list of the cases is presented in Table 8.

Table 8. Case Companies

Case Company	Interviewed Person	Company Size	Month/ Year
Case 1: Micro Partner (MP)	CEO	2-4 employees	10/2016
Case 2: Small Software Vendor (SSV)	CEO	50 employees 5 M€ revenue	10/2016
Case 3: Medium Software Vendor (MSV)	Manager of International Operations	few hundred employees tens of millions of € revenue	10/2016
Case 4: Big Software Vendor (BSV)	Sales Director	1600 employees 140 M€ revenue	10/2016

4.1 Case 1 – Micro Partner

Case company 1 (MP, 2016) is a micro size consultancy company which used to act as a partner to two independent software vendors. Both ISVs provided software for supply chain optimization. First vendor's product was targeted to small companies and the second one's was targeted to bigger companies. This enabled the micro size partner to select the appropriate solution for their customers. Altogether the case company 1 employed 2 persons and 4 at the best. The interviewed person was the CEO of the company.

4.1.1 Partners

When the interviewed person was asked about the co-operation with the software provider for big companies, he described that his company's responsibility was to take care of sales, business side implementation, and the first line of support to the customer. Project implementations were often done by two persons – one who was main responsible for customer communication and business logic, and the other who implemented technical related aspects such as integrations and certain system configurations (the technical person came from ISVs side). The interviewee mentioned that when certain things, such as interface specification, was done properly it was possible to execute the projects in a way that the work needed for technical implementation was very small. From the ISV's point of view, this was good since they wouldn't then need to put a lot of effort into the project.

One of the main challenges in co-operation with the ISV was getting information. First of all, since they were two different companies there was always a barrier for asking for help. In addition to that, getting information about "pretty much anything" was mentioned to be challenging. "You had to ask the right question" as the interviewed person described. There wasn't any systematic way of sharing knowledge which caused the partner's knowledge level to stay about on the same level when they first had learned the software. Other main information gaps mentioned here were new features of the software and sales material.

4.1.2 Certification

Case company 1 didn't have any certifications and it hadn't faced a situation in daily business where there would have been a discussion about certifications. Despite this, some partner programs and possible related certifications were known by the interviewee. The value of certification, however, seemed questionable. The interviewee illustrated this by mentioning that "for the partner, certification could be just a star at the bottom of their web page", i.e., it doesn't bring any real value. The interviewee's opinion about certificates and their relation to training can be further described with the following quotes:

> *"Of course, training is needed, especially if you don't know anything about the software, but it is a different thing if you need a graduation diploma from that training."*

> *"There won't be any benefit from the certification after they [a partner] have done the [customer] project. After that, they know how to do things and certification would be only a star at the bottom of the web page."*

The main costs of certification from the case company's point of view were monetary payments and time required for completing it. Especially as a small company, they weren't interested in paying for the training. Also, the time spent on getting a certificate was taken away from valuable activities such as meeting your customers or cold calling.

Despite the skeptical opinion, the certification was seen beneficial from ISV's perspective. One of the main reasons for that were partner's competence. Especially if the partner is competent enough to deliver the correct message and communicate the software's value to the potential customers. The interviewee mentioned that if the partner fails to do these, it is possible that the customer doesn't get interested and will lose all further interest towards the software since they have "heard everything". This could lead to a situation where the potential customer isn't receptive anymore to further sales attempts. Interviewee pointed out that it might be possible to prevent those issues with certification because ISV would know that the partner knows at least the minimum amount and presumably can communicate the software's value in a sufficient way. Also, the incentives to participate in such a certification program was discussed. As described by the interviewee, one way to force partners to go through certification or training would be to tie it directly to the sales commission they get. For example, if they haven't gone through the training program they would get 15 % smaller sales commission.

4.2 Case 2 – Small Software Vendor

Case company 2 (SSV, 2016) is a small ISV who does analytics software that can be used in all industries. The company's revenue was a bit over 5 M€ and it had around 50 employees. The interviewed person was the CEO of the company.

4.2.1 Partners

The company had a few partners:

1. the company itself belonged to Microsoft partner network,
2. it had got a few sales leads from a few other companies,
3. it had sold its software to a consultancy house which used it as a tool for serving their customers,
4. and the case company used another ISV's product as a part of their software.

The main reasons for belonging to Microsoft partner network, and being Microsoft certified partner, was that they used Microsoft technologies in their product and they were able to get Microsoft's software for a significantly cheaper price. The cost savings mentioned were several thousand euros per year. In addition, they got a certain amount of free support from Microsoft (even though that wasn't used much). In order to get the benefits, they had to renew the certificate every year. Renewal process required a couple of day's work. There were a few requirements: First, their software had to be tested. It was possible to do this by themselves so it wasn't considered a burden – especially since earlier the process required a third-party verification and it took rather long time. The second and third requirements were that they had to have customer references, and Microsoft certified persons. Overall the interviewee seemed to be rather satisfied with the program especially since it had gone to "a smarter and easier" direction.

The second partner type mentioned was the sales leads or "finder's fee" model. For the case company, these were typically small consultancy companies – even one man companies – which gave sales lead for the case company. The consultancy companies were paid a reward for providing the lead. The interviewee described that these partners hadn't usually given much for them, "maybe a sale or two" was mentioned. Altogether

they had paid only a few finder's fees ("*You could probably count those with one hand fingers.*") during the past 13 years.

The third partner type the interviewee mentioned were consultancy companies which used the case company's software as a tool. They had done a few projects with these types of partners and the case company's role was more or less to handle data crunching. Interviewee pointed out that the case company's role was more like a supplier rather than a partner for the consultancy firms. However, with one of the consultancy firms, the cooperation had continued for a longer period. These types of partnerships were considered valuable as often the end customer had become the case company's direct customer, and the partnerships with widely known consultancy houses gave visibility and credibility for the case company.

The fourth partner type was an ISV whose product was integrated into the case company's product. The partner's software complemented the case company's product by providing reporting and visualization tools and they had "OEM" (*Original Equipment Manufacturer*) contract. Despite rather a deep relationship, there weren't any formal certifications, only a few persons were trained when they started using the new technology. The interviewee mentioned that they were generating quite good revenue for the partner which he considered to be quite good assurance for them instead of a certificate.

4.2.2 Certification

In addition to the Microsoft partner program (see previous chapter, "4.2.1 Partners"), certifications weren't used anywhere in the case company's business. The interviewee was asked, "when a company should certify its partners?" First, he pointed out that once the partner business starts to be professional and continuous certifications can be considered. For the case company, it would mean that they would first need to understand what the partner business exactly is, what the partners can do, and what the partners need to know. Also, the number of partner applications they had didn't justify a formal certification program. This was illustrated by the following quote

> *"If we get only one partner application per year, does it make sense to have a thorough certification process?"*
>
> *(Orig: "Mutta jos tulee kerran vuodessa yksi partnerihakemus niin kannattaako siinä vielä hirveetä sertifiointi prosessia olla?")*

The second aspect that was pointed out was that certification could act as a filter for possible partners. A company could rather easily see which partners are really interested in putting them through a certification program. Some of them might just want to get a partner logo so they could say they are a reseller. The interviewee also mentioned that Microsoft's partner program might be partly based on this filtering logic – one cannot simply just say they are a Microsoft partner and get office software package for free.

4.3 Case 3 – Medium Software Vendor

Case company 3 (MSV, 2016) is a medium sized ISV which does software for companies that act on a certain regulated industry. The company had a few hundred employees and its revenue was tens of millions of euros. The software they were selling acted as a fundamental part of customer's IT systems and played a central role in customer's business. The software can be categorized as highly complex since it requires integration to many customer systems. The interviewed person was in the leading position of their international operations and had been involved in the company since the beginning.

4.3.1 Partners

The case company used partners extensively in their international sales. The interviewee mentioned that developing software (R&D) is their core business which meant that they weren't interested in building up a large delivery organization of their own. Their typical partners were system integrators and interviewee mentioned that for example sales agents weren't really used. Usually, the partners were large companies who had operated on the same regulated industry. Some of the partners even had their own products which complemented the case company's product. That made it possible for the partners to pre-build a comprehensive solution for a customer where the case company's

product would act as a part of the value chain. The interviewee mentioned that it was one of the fastest ways to enter a market and it would be motivating for the partner as well since they could sell their own product at the same time.

Overall, they had several partners scattered in different countries and a couple of them acted globally. One of the principles in their partner management was to “minimize the amount of the partners and maximize the outcome”. One of the reasons for using that principle was that the case company didn’t have enough resources to handle a large partner network at that moment. When asked, do they have multiple partners to select from, the interviewee answered: “yes and no”. They are known company in the industry so big integrators are interested in cooperating with them and there are several benefits in partnering with a big company. The interviewee elaborated the benefits further but didn’t explain why there weren’t many partners to choose from.

4.3.2 Certification

The case company appeared to have a well-structured partner program which included training, annual payments, certifications, and such. The interviewee wasn’t willing to share all the details of the program but instead described it on a general level.

The following quote from the interviewee can be used as a starting point for outlining the purpose of a partner program from their perspective:

> *“Partner program is a framework used to build partner’s lifecycle starting from the very first sale.”*

The interviewee further explained that on a practical level the idea is to offer the partner knowledge about the case company’s product and tools so the partner can sell, deliver, and support it. The partner would bring tools and processes for sales, and when the first sale is confirmed, appropriate competence transfers and support to the partner will come through the program. “After the first project is delivered the partner already knows quite a lot.”, the interviewee described. It was also mentioned that it is important to think through the different phases of the partnership since it helps to give a structure

for it. Especially if there are multiple partners appropriate structure is important since "things might get out of hands" if the partnership haven't been thought through.

The certification process itself depended on the partner. In general, the approach in the case company was to "enable sales, enable delivery, enable maintenance". For example, to sales this meant that partner had to be certified to sell so they wouldn't ruin the case company's reputation. Partner had to know what they can say and what they can't because these could lead to problems. "It must be thought how the partner represents the company on the market", the interviewee described. The interviewee pressed that decent amount of flexibility and especially being pragmatic is important in training and in the partner model overall. The flexibility was illustrated by the following quote:

> *"The software vendor must adapt to the situation and think what approach suits the best. [...] It is a strength when certain basic things are thought trough and done properly, then the flexibility is controlled. Being without appropriate control could create problems in the software business."*

There were two other interesting aspects of certification that were discussed during the interview. First, the interviewee mentioned that there might be cultural and country differences in how certificates are appreciated. For example in China, a company must have appropriate documents before they can deliver anything. More specifically the interviewee mentioned that they need to have "partner certificate" document which proves that the company is certified to sell and deliver the MSV's product. But still, despite the documents, the customers are interested in previous projects and customer references since the certificate "doesn't tell much" as the interviewee described.

The second aspect mentioned by the interviewee was that certification is not only about training. It can also be used to measure partner's commitment and it can act as a measure of competence for the partner's management. The interviewee considered this important since the partner could face questions such as "do you have the competence to deliver this new solution? are you able to sell or implement it?". If partner's personnel have completed appropriate certifications it is easy for the management to answer

these questions promptly. Additionally, the certification offers the partners clear roles and learning paths which they can use to train more people. This perspective to certification was also illustrated by quote

> *"Having this kind of clear structure and certainty helps the partner since they need to take 'a leap of faith' by going into a new partnership"*

The last question interviewee was asked was "when should company certify its partners?". The answer was "It depends of the company." The interviewee explained that a company should have a template or a partner program thought for themselves. The approach should be pragmatic because it is easy to build a program which doesn't match the actual need. The interviewee pointed out that then the partner program won't succeed and it must be redone right away. This applied especially to the certification. The interviewee also mentioned that the program must be kept simple and transparent, and if there are costs involved partner would have to understand why they need to pay for something. The interviewee concluded the answer by stating:

> *"It helps a lot to have a clear structure for the partners because if the first discussions end up going anywhere near well, then there will be questions about next steps for example how to do ramp-up? what kind of persons are needed for sales, implementation, and support? When these, and different phases of partnership lifecycle have been thought through it is nice to go and have a conversation with the partners. It creates mutual trust and could convince them to invest into the possible partnership."*

4.4 Case 4 – Big Software Vendor

Case company 4 (BSV, 2016) is a big ISV who's software can be used across industries. The software is used for financial operations. The company had around 1600 employees and revenue around 140 M€. Typically, the implementation projects are rather big which has lead the company to focus on medium sized and big customers. However, as will be

later described smaller companies can be accessed e.g. through partners. The interviewed person was a sales director in the case company and also responsible for partners in certain countries.

4.4.1 Partners

The case company had multiple partners in various countries and continents. In general, direct sales accounted for approximately 75 % of the total sales and 25 % of the sales came via partners. This ratio varied significantly by country. One of the case company's goals was to raise the channel sales as that was considered a lot more scalable. The interviewee mentioned a few factors that are important in scaling the partner sales. First, there must be a market and need for the solution. If there isn't, it doesn't matter what is being done, the partner sales won't lift off. *"Or it might be possible to get partners but there won't be any sales"*, he described. Second, cooperation must be simple and clear enough for the partner. The interviewee explained that this considers things such as the product, pricing, and breadth of the product portfolio offered for the partners to sell. The main issue mentioned was that partners are not able to keep up with the frequent change if things are too complex for them.

There were four types of partners that were described in detail by the interviewee. First one was co-selling cooperation where partners would help each other selling each other's products without monetary compensation. In co-selling, the case company and the partner didn't usually have any overlapping products and the products would be something that the customer wants to implement at the same time. The interviewee also described that the partner wasn't interested in learning the case company's product and vice versa so it made sense to have a co-selling relationship. As an example, he mentioned that the partner could have an existing customer who has a need so the partner would ask the case company to come and present their solution. These types of partnerships were usually based on common benefit or personal relationships. The interviewee said that co-selling partnerships do not require a contract. However, sometimes a contract was made which would specify that the parties don't pay anything to each other.

The second type of partnership mentioned was a sales agent model. In the case company, these partners varied from small to big companies. The sales agents typically had contacts to the customers who needed the case company's solution but the partner itself didn't really have the capability to deliver so they settle for selling or sometimes just bringing the lead to the case company. As a reward, the partner received a sales commission, i.e., a finder's fee. The interviewee described that the reward would be paid when a certain milestone is reached for example when a deal is closed. These partners had a short (e.g. two page) contract where mainly the reward scheme was specified.

Third partner type was what the interviewee called a reseller. Terminologically these partners were also called as value-added resellers or virtual operators in the case company. In this model, the relationship to the partner would be deeper and the partner would also do sales, delivery, and support. The interviewee mentioned that the case company would provide the technological solution and the partner would be responsible for the customer relationship and implementing the solution to the customer. The case company would bill the partner and partner would bill the customer. In terms of support, first line support would be done by the partner, second line support would be the case company's support team, and third line support would be the case company's development team.

Fourth and the last type of partner model in the case company was what the interviewee called "the real virtual operators". In these cases, the partner would be another software provider such as cloud ERP provider. The case company would set up only one software instance which the cloud ERP provider could then use to provide the case company's service to its customers via its own platform. So, the partner would act as a consolidator or aggregator who would collect a huge quantity of small volumes into one place that would be then available for the case company. In this way, the case company could access the smaller customers which would not be profitable otherwise. One of the challenges mentioned by the interviewee in this model was convincing the partner to build up necessary functions and features at their end to enable providing the new service. The interviewee also mentioned that these cloud ERP providers act a bit like app stores.

So, software vendors can create plugins or additional services for the cloud ERP platform and the customers can then buy these plugins from the ERP's app marketplace. The interviewee was displeased about these marketplaces. He described that the cloud ERP vendors won't do anything to help the plugin creators. *"You'll get your solution to their app store for sale but that's it"* as the interviewee mentioned.

4.4.2 Certification

The case company didn't certify their partners as a company but instead, they had a training program that the partner's employees could attend. After completing the training, they would get a certificate. The case company had training programs for technical and sales people. The sales training, however, didn't have the official certificate and partners didn't usually attend it. The interviewee described that one of the reasons why partners didn't attend the sales training was that the employees probably didn't get a permission or money for it. The interviewee suspected that sales were something that partners thought they "could just learn" whereas technical parts were not. This had led to the situation in the case company that the partner manager would have to do necessary sales training for the partners he was responsible for. The benefit of this model for the partner was that they didn't need to travel but the issue was that the training wasn't very structured. *"Sometimes it [the training] went well and other times it didn't"*, the interviewee described. Also, if people were busy the quality suffered. This was illustrated by the interviewee:

> *"Follow up was one of the things that could get easily left out so the training would be just 1-2 days intensive periods where the partner manager shows everything and no further sessions are held except after the partner gets some sales or something like that."*

In addition to their own technical and sales training, they didn't have any other certification-related programs of their own. From other vendors, however, they had certificates. These were technological compatibility certificates from the big software providers such as Microsoft, Oracle, and SAP. The interviewee also pondered if the case

company should create this kind of compatibility certificates for their partners but didn't feel it necessary just yet.

When the interviewee was asked when a software vendor should certify its partners the answer could be summarized in the following quote:

> *"If partners see value in it, then you should certify."*

The whole answer was more elaborate. The interviewee mentioned that if a software vendor is in monopoly position then certification would create a lot of value for the partner and it would be worth to do it. As an example, he mentioned sales force consulting in Finland. It is a big CRM system and there are only a few companies which can offer consultation for it. Then a certificate would create a lot of value for the partner, the interviewee described. He also mentioned that if there are multiple providers on the market then the certification would be "a bit like nobody cares". Another example was that if a company grows big enough, then the marketing value grows as well like with Microsoft. *"You'll have to be a certified partner"* the interviewee illustrated.

5 Analysis and Findings

In this chapter, the empirical data is analyzed, bound to literature, and the answer to the research questions and the problem is sought. This chapter consists of two main parts. First, different types of partners are recognized from the data. Second, certification models used by the interviewed software vendors are identified and reasons for certifying is analyzed from four different perspectives. This chapters relevance to the research questions is shown in Table 9 below.

Table 9. Chapter 5 structure and focus

Sub-chapter	Focus
5.1 Partnership Models in Business Software Sales	RQ1. What types of partnership models are used by independent software vendors in software sales?
5.2.1 Certification Models Used by Independent Software Vendors	RQ2. What types of certification models are used by independent software vendors?
5.2.2 Certification as a Part of Partnerships	RQ3. What factors affect the independent software vendor's decision on implementing a certification program?

5.1 Partnership Models in Business Software Sales

Literature review and empirical evidence revealed several partnership models in the software industry. It must be noted that it wasn't very clear where the exact line between a supplier and a partner laid. It seems that one possible distinction is that partner is a company that has a strategic significance to the other company. For example, a hardware provider could be just a supplier for some companies whereas for others who might require special hardware they are categorized as a partner or alliance member.

As discussed in the literature review, partners were typically categorized by their functional role so that approach was adopted in this chapter as well. The main reason for

selecting that perspective is that (a) it is the most relevant from a certification perspective, and (b) that categorization was used in all the interviews so it seemed to be the most relevant in practice as well.

The chapter is structured as follows: First, the partnership models that are relevant for independent software vendors are defined. The definitions are based on the observations done in the interview with BSV (2016) which are compared to typical partnership models presented by Popp and Meyer (2010). Second, the definitions are tested by using them to categorize the partnerships observed in the other three interviews (MP, 2016; SSV, 2016; MSV, 2016).

5.1.1 Defining Partnership Models in Business Software Sales

As a starting point for defining partnership models, the structure presented by BSV (2016) was selected. There were four distinct levels in partnerships discovered in the interview. These are presented in

First partnership type “co-selling” wasn’t listed as a typical partner model by Popp and Meyer (2010). The referral program was the closest one but these two have a fundamental difference that co-seller partner doesn’t receive any monetary reward when referral partner does. The reason why this hasn’t been included in Popp’s and Meyer’s typical partners might have been that the model has its roots in big corporates such as SAP and Microsoft. There co-selling partners could be non-existent or they might not have significant meaning. However, as this partnership type was pointed out by BSV (2016) and described in detail, there is a reason to believe that these partners have their place in SME’s and big companies’ business. Even further, ISV’s customers who advocate the software could be thought as co-selling partners as well. Thus, it is important to add “co-selling” as one of the partnership models independent software vendors use. The supply chain model of this type of partner is illustrated in Figure 9.

Table 10 along with brief descriptions. These partnerships were compared against the typical partnership models described by Popp and Meyer (2010). The main reason for

selecting Popp and Meyer's model was that it is the only one that was found from literature which systematically lists typical partnership models.

First partnership type "co-selling" wasn't listed as a typical partner model by Popp and Meyer (2010). The referral program was the closest one but these two have a fundamental difference that co-seller partner doesn't receive any monetary reward when referral partner does. The reason why this hasn't been included in Popp's and Meyer's typical partners might have been that the model has its roots in big corporates such as SAP and Microsoft. There co-selling partners could be non-existent or they might not have significant meaning. However, as this partnership type was pointed out by BSV (2016) and described in detail, there is a reason to believe that these partners have their place in SME's and big companies' business. Even further, ISV's customers who advocate the software could be thought as co-selling partners as well. Thus, it is important to add "co-selling" as one of the partnership models independent software vendors use. The supply chain model of this type of partner is illustrated in Figure 9.

Table 10. Summary of BSV (2016) partnership types

BSV's Partnership Type	Description
"Co-selling"	Partner sells ISV's solution but doesn't receive a monetary reward. The relationship is based on mutual benefit or personal relationships.
"Sales Agent"	Partner sells ISV's solution *and* receives sales commission or finder's fee. Partner doesn't have capability or interest to deliver the solution.
"Reseller", "Virtual Operator", "Value-added reseller"	Partner sells ISV's solution and also participates in delivery and support. Partner and ISV have divided roles.
"The Real Virtual Operator"	ISV's solution is embedded into the partner's solution.

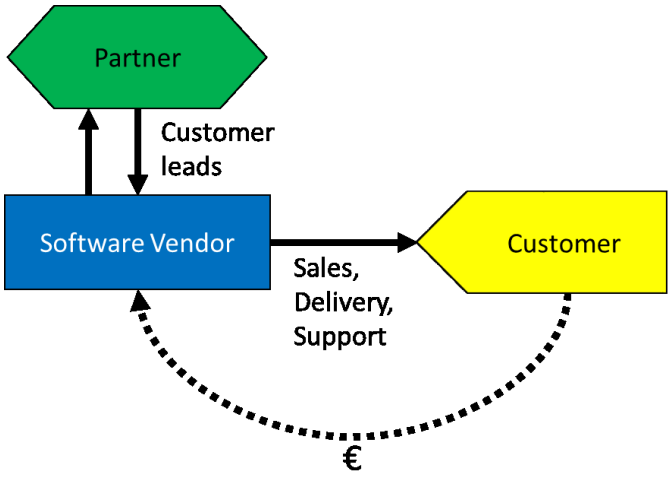

Figure 9. Co-Selling partnership model's supply chain

Second partnership type "sales agent" had a clear equivalent in Popp's and Meyer's (2010) typical partners, and it was referral program. In this model, the sales agent would get a monetary reward, e.g., referral fee, based on leads provided by the software vendor. Even though the fit was very clear it is not obvious if a "sales agent" could actually be a "reseller" in some instances. First, let's inspect more closely what a reseller and value-added reseller mean. The reseller and value-added reseller have been discussed by many authors (see e.g. Popp and Meyer, 2010; den Hartigh et al., 2013). When resellers and value-added resellers are compared the main difference seems to be that "value-added reseller" as a term is used to emphasize that a certain reseller provides additional products or services to increase the end solution's value. That would mean that the reseller term could be treated as an umbrella term and value-added reseller is one sub-type.

Can sales agent then be a reseller? The differentiating factor here according to Tsay and Agrawal (2004) is the satisfaction of channel demand. If partner satisfies the demand, then they are a reseller but if the demand is satisfied by the manufacturer then the partner is a sales agent. The exact distinction between these two will go into technicalities of contracting and to questions such as who bears the financial risk (Jones, 2013; MK Law, 2013). Also, one relevant aspect is who the customer pays to as was highlighted by Popp and Meyer (2010). It can be then concluded that a sales agent is not a reseller.

Based on the above analysis “sales agent” is added as the second partnership type into the model. And as a starting point for the next partnership type, it seems that a “value-added reseller” would provide more meaningful comparison than a “reseller” since it is more precise and easily distinguishable from a sales agent. The supply chain of sales agent model is illustrated in Figure 10.

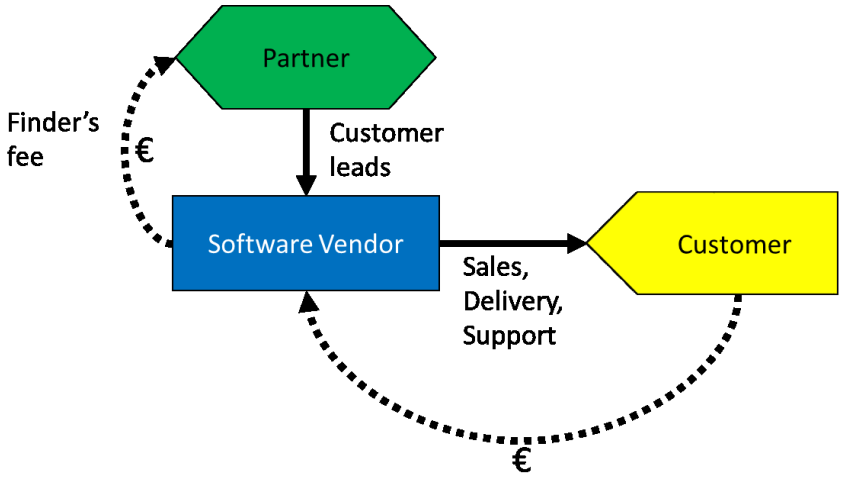

Figure 10. Sales Agent partnership model's supply chain

Third, partnership model mentioned by BSV (2016) was a reseller model. These partners were called as “virtual operators” or “value-added resellers” in certain contexts. As described previously the relation between sales agent, reseller and value-added reseller should be already clear. However, the meaning of virtual operator isn’t. The virtual operator was defined by Kiiski and Hämmäinen (2004) in mobile network context as follows:

> *“Mobile virtual network operators (MVNO) buy network capacity from a mobile network operator (MNO) to be able to provide a full portfolio of mobile services for their own subscribers”*

Following the definition and further description in the article (Kiiski and Hämmäinen, 2004), it appears that a “mobile virtual network operator” is a value-added reseller. They sell MNO’s product and add value to it by providing additional products or services. The difference in the terminology, in this case, seems to stem from a certain type of industry and products or services that are sold. This finding suggests that the “virtual operators” mentioned by BSV (2016) are linked to the certain type of products and they could be

categorized as value-added resellers. That was also mentioned by the interviewee (BSV, 2016) while discussing the virtual operators.

"value-added reseller" is added as the third partnership model. Based on the evidence that term captures product and industry specific variations on sufficient level. Moreover, it makes the model clearer by creating a big enough cap to sales agent which should allow more meaningful comparisons in the scope of this study. As a drawback, it is expected that some companies might find it difficult to place their "sales-only-resellers" into the model as those would belong somewhere in between the sales agent and the value-added reseller types. The supply chain of value-added reseller partnership model is presented in Figure 11 below.

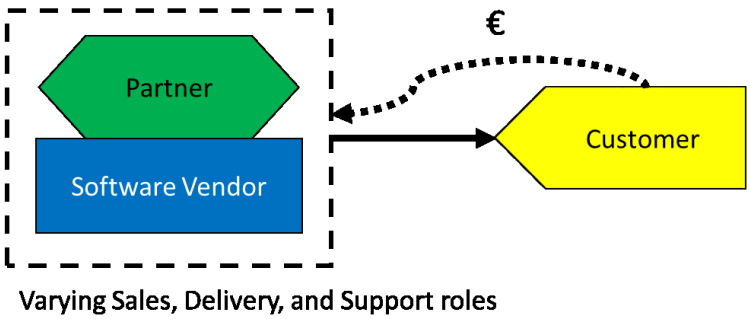

Figure 11. Value-Added Reseller partnership model's supply chain

The last partner type mentioned (BSV, 2016) was "The Real Virtual Operator". In this model, ISV's product would be embedded into the partner's product. Seems like the term used here is once again industry specific as this partnership model is clearly OEM model (*Original Equipment Manufacturer model*). The main difference to the value-added reseller is that instead of selling ISV's product, partner sells its own product into which ISV's product is embedded in a way or another. This type of partnership model is illustrated in Figure 12 below.

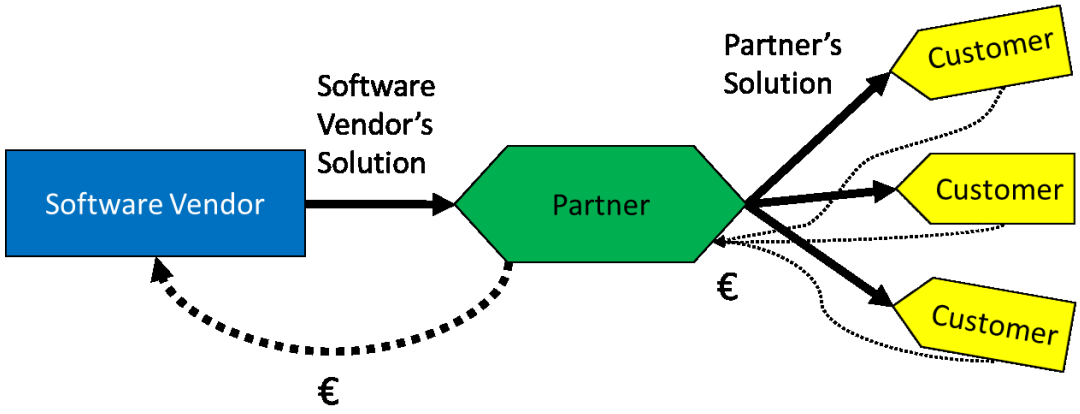

Figure 12. OEM partnership model's supply chain

The summary of the definitions is presented in Table 11 and these are illustrated in Figure 13. An interesting perspective with these constructs is that they have varying level of depth on different aspects. For example, the depth of the partnership seems to go deeper as the scale proceeds from co-selling towards the OEM model. This is illustrated by presenting the partner types as a ladder in Figure 13. Similarly, the customer control shifts from the ISV to the partner which has its own interesting implications. Also, the term "reseller" is presented in the illustration in order to emphasize its position as an umbrella term instead of a specific partner type.

Table 11. Definition of Partnership models

Partnership Model (partner type)	**Definition**
Co-Selling Model (Co-Selling partner)	A model where partner sells or helps to sell the software vendor's software but doesn't get a monetary reward.
Sales Agent Model (sales agent)	A model where partner sells or helps to sell the software vendor's software and gets a monetary reward from the software vendor.
Value-Added Reseller Model (value-added reseller)	A model where partner sells the software vendor's software and creates added value for the customer by providing additional products or services.
OEM Model (OEM partner)	A model where software vendor's product is embedded into partner's product.

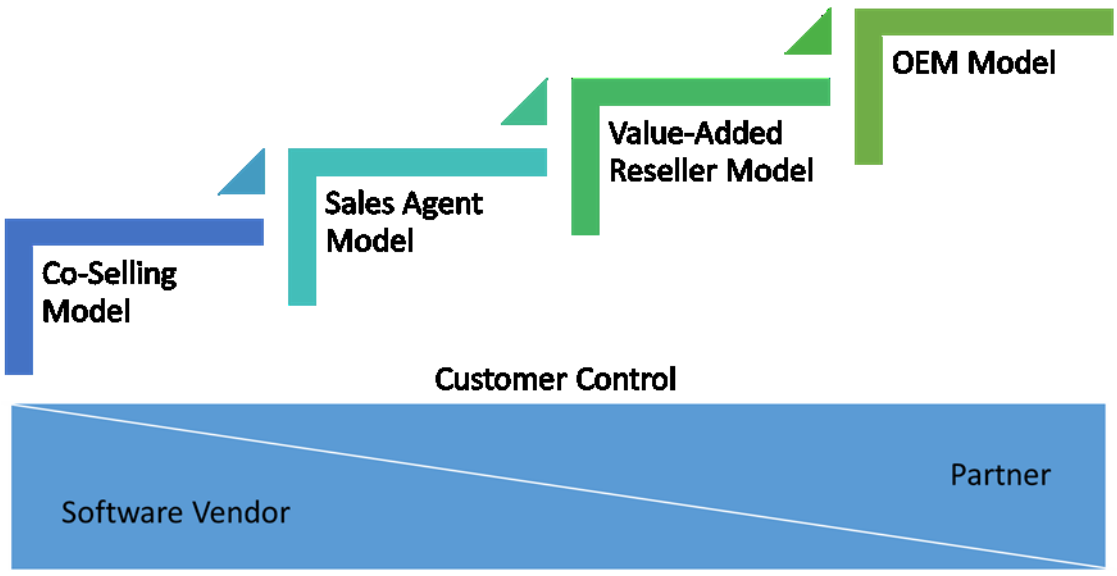

Figure 13. Partnership Models and Customer Control

5.1.2 Categorizing Empirical Data Following the Partnership Models

This chapter aims at testing the model that was created in the previous chapter. Since the model was created mainly based on the BSV interview (2016) and the model presented by Popp and Meyer (2010) it is important to test the fit against other empirical data that was gathered in this study. For the sake of brevity and since the categorization criteria were already discussed in depth, now settled only for categorizing the empirical evidence under each partnership model (Table 12) and pointing out a few extra insights got while doing this.

The first interesting observation was made from the relationship between SSV (2016) and the consultancy house that used their software as a tool. It might not be obvious into which category this kind of partnership should be put into. Consultancy house sells a service, i.e. consulting, and the SSV acts as a supplier by doing data analysis. The data analysis results were used by the consultancy house and potentially the end customer might have seen those same results even with SSV's brand linked to them. It is not clear if the partnership should be categorized into *"Value-Added Reseller Model" or "OEM Model".* The OEM Model appears to be a better fit, as the end customer doesn't use SSV's solution and the consultancy company does not directly sell the SSV's solution. Instead, the consultancy company sells *their own* solution (i.e. service) where SSV's solution is *embedded* into. The insight from this is that the distinction between Value-Added Reseller and OEM Model can be assessed by asking questions "Does the customer use software vendor's solution?" and "Does the partner sell software vendor's solution directly to the customer?".

Similar kind of juxtaposition can be used for example with MSV (2016) who had a relationship with system integrators. If the end customer really uses the MSV's software and system integrators sell it as a part of the total solution, then the exact term is value-added reseller. But, if MSV's software acts as a foundation (i.e. middleware) on top of which the "system integrator" has built the solution then it is OEM model. Based on the previous, it means a "system integrator" isn't a partnership type – it is a company type and they can act as a partner in one or more partnership models.

Table 12. Partnership Models and Empirical Evidence

Partnership Model	**Empirical Evidence**
Co-Selling Model	• BSV (2016) had co-selling partners which gave the company a lead but didn't get a monetary reward in return.
Sales Agent Model	• SSV (2016) had got a few sales leads from other companies and paid finder's fee from those. • MSV (2016) didn't use "sales agents". • BSV (2016) had sales agents which gave the company a lead and got a monetary reward in return.
Value-Added Reseller Model	• MP (2016) sold, delivered, and supported software vendor's software. • MSV (2016) used system integrators extensively. These companies participated building the solution for the customer where MSV's product acted as one part. • BSV (2016) had reseller partners which in some contexts were called as "virtual operators" or value-added resellers. These partners sold the software vendor's solution to the end customer and participated in delivery and support as well.
OEM Model	• SSV (2016) had a long term relationship with a consultancy house which used software vendors product as a tool to serve their customers. • SSV (2016) belonged to Microsoft partner network and used their technology to build the software. • SSV (2016) used other company's solution as part of their product. • BSV (2016) had "the real virtual operators" which had embedded the software vendor's solution as a part of the partner's solution.

One interesting approach to the categorization is to observe if one company could belong into multiple partnership models. In other words, could a company have multiple roles in the partnership? The small software vendor (SSV, 2016) who was partnered with a consultancy company the interviewee mentioned that the customer of the consultancy company had sometimes become their direct customer as well. So, it is highly possible that the consultancy house has recommended or advertised the SSV's solution to their customer, therefore, acting as a "co-selling" partner. The evidence suggests that a company could have multiple partner roles. This type of observation has also been made in software ecosystem literature by van Angeren et al. (2013) when they constructed a conceptual overview of associate models (see Appendix 2). In the model, they suggested that one organization could have multiple roles, and each role has their own requirements and responsibilities. Moreover, one organization could have multiple contracts with its partner.

5.2 Certification

In this chapter, certification related findings are discussed and analyzed. The first chapter (5.2.1) inspects certification models that are used by independent software vendors. Then chapter 5.2.2 more closely analyzes why these models were used and what are the factors that could push software vendor towards using them.

5.2.1 Certification Models Used by Independent Software Vendors

As discussed in the literature review, certifications can be categorized into third, second, and first-party models. From these, third-party models and how certification was used in partner and supplier relationships were discussed. When it comes to the empirical data none of the interviewees explicitly mentioned ISO certificates or software industry-specific third-party certifications such as TickIT Plus, even though these could potentially be used by ISVs e.g. to gain credibility. Using third-party certificates didn't seem to be a common practice. However, vendor-specific certifications, i.e., second-party certificates, such as Microsoft, SAP or Oracle were explicitly mentioned in three out of the four interviews (MP, 2016; SSV, 2016; BSV, 2016). In addition, two of the case companies (MSV, 2016; BSV, 2016) had their own certification program.

It is not self-evident why the case companies had selected vendor-specific certificates over general third-party certificates. In order to find a possible explanation for that, two different relationships: customer-supplier relationship and ISV-partner relationship. It is possible that customer requires a third-party certification from their suppliers to ensure the quality in the supplier selection phase. This would lower the risk in the transaction for the customer, but the verification would be only partial as that would verify that the supplier follows only certain processes rather than the product actually filling the customer need. This model wasn't mentioned by any of the interviewees which suggests that it isn't being used. One of the reasons for this is that ISVs are able to use other kind of quality signals (Dewally and Ederington, 2006) than certification. Especially customer references were mentioned to be important (MSV, 2016) which act as an information disclosure signal. If ISVs are compared to software vendors who develop customer specific software, ISVs also have the possibility to offer their product at a smaller upfront cost especially if they operate with SaaS model. The risk and upfront cost for the customer would be a lot smaller, thus, supplier selection could theoretically be less careful.

In ISV-partner relationships the situation is a bit different. Theoretically, ISV could require their partners to have a certain third-party certificate before considering a partnership with them. The benefit of that would be that the ISV could have an assurance of the potential partner's competence before investing more time into them, thus, transaction costs would be lower. This, however, didn't seem to be the case in practice. The empirical data revealed that other kinds of tactics were used assess the partner. More specifically ISV could just have a conversation with them (BSV, 2016) or they could use more fine-grained metrics such as partners experience (MSV, 2016) which would also lead to more accurate evaluation.

Vendor specific certificates, however, were used in ISV-partner relationships. There were multiple drivers for this as will be discussed in the next chapter (5.2.2) but the main reason appeared to be, as per transactions cost economics, related to additional cost required for implementing the certification. No matter how ISV would select their partners, ISV would need to arrange a training for the partner. Adding a certification on top of the training program doesn't add significant cost so if the benefits are higher, then it

is worth to add a certification program. This led to the conclusion that the concentration should be on observing vendor specific certifications. In the next chapter, those will be the focus.

5.2.2 Certification as a Part of Partnerships

In this chapter, the aim is to provide an answer to the third research question "*what factors affect the ISV's decision on implementing a certification program?"* This will be done by discussing the relevant aspects raised during the interviews and recognizing common themes from them and the literature. Altogether four themes relevant for certification was identified which are training, quality, governance, and marketing. The themes were identified by listing the key points described by the interviewees, grouping them together based on similarity, and assigning relevant tags for them (e.g. commitment, quality, credibility).

Training

The first theme that was raised in all the interviews was training. Certification is often a part of a training program or training is a fundamental part of the certification process. MP (2016) mentioned that training is needed but wasn't convinced if a graduation diploma, i.e., certificate, is needed from that. One of the benefits he mentioned was that a certificate would help software vendor to ensure partner's competence so that the partner would, for example, know how to sell the ISVs software. SSV (2016) had a certificate from Microsoft which required a couple of employees to go through a training program. For MSV (2016) the certification was seen as an enabler. The partners would go through a training program after which they would get a certificate and then they would be for example certified to sell. The appropriate knowledge transfers and training would be done when those are actually needed instead of doing them before the partner even had a potential customer. BSV (2016) described that after successfully passing the training partner's employee would get a certificate. Also, the importance of a ramp-up program was raised while discussing the training aspects of certification (MSV, 2016; BSV, 2016).

From the gathered evidence, a set of training related factors were identified which might affect the likelihood of certification implementation. One related factor was product or service complexity. The interviewee at SSV (2016) described that it was possible to execute their typical projects with just one man operational team from their side. In bigger projects, around couple hundred person's working days, there would be a separate project manager. The end user training would require a maximum of one day, and some of the training customers could have on their own. This can be compared for example to MSV (2016) where they described that their solution is integrated to multiple customer systems for example to 10 to 50 or even 100 different end systems. A typical project would last maybe 0,5 to 1 years. Theoretically one of the reasons why this would affect certification is that ISV or a partner could then identify the depth of knowledge of certain persons.

Another possible factor that was identified was product portfolio width. This was briefly mentioned by MP (2016) by mentioning that if ISV has two products and certification program is created for one of them, then the other one must have one also. BSV (2016) on other hand stated that they have quite wide offering so he wouldn't give those all to a partner to sell right away because it would be overwhelming. It is possible that a software vendor might decide to use certification in order to know which partner knows about which product. Therefore, having a wide product portfolio makes it difficult for ISV to know who is able to sell and implement certain products so certification could be one way to solve that issue.

The main cost aspect related to the training was the effort required from both sides and possibly other direct costs such as hotels and flights. BSV (2016) described that the cost is probably one of the main reasons why partners don't go through their sales training. MSV (2016) on other hand had minimized the training costs by giving training only when it is actually needed. One potential way to lower the costs of training would be to offer those remotely or as self-study material. When it comes to the certification it appeared to be that the training related cost specifically about certification is the testing or assessment of e.g. has the person learned the subject.

Our research problem was to seek an answer to if ISV should certify its partners and how it should be done. From a training perspective, there doesn't seem to be one single answer to this as it depends on the company and the context. One of the main questions in partnerships from training perspective seems to be "*How is the training arranged?"* While seeking solutions to these two questions ISVs can also evaluate the fit and purpose of the certification as a part of the training. The summary of the training related findings is presented in Table 13.

Table 13. Affecting factors and key questions in partnerships from training perspective

Affecting Factors	Key Questions
Product and service complexity Product portfolio width Cost of training	How is the training arranged?

Quality

The second theme about certification which is closely related to training was quality aspects. This was emphasized especially in the literature which can be seen also from the reported, e.g., customer satisfaction, product defect rate decreases, and quality awareness. Quality aspects weren't explicitly discussed by the interviewees expect by SSV (2016) who briefly mentioned that certification program alone doesn't guarantee the quality of the partner. The quality aspects were implicit and often raised during the discussion about training. One of the main points of using certification was that it could be used to measure partners competence (MP, 2016; MSV, 2016; BSV, 2016). The competence on other hand can be used to predict the quality, or at least reduce the risk of failing the project. BSV (2016) also raised an interesting issue that the training tend to have some variance if it was done by a partner manager and especially if he was busy. Follow-ups were mentioned to be one of the areas that suffered which was also mentioned by MP (2016) by stating that they struggled to keep up with the changes in ISV's software. In terms of quality, this means that there can be significant variance in partners' competencies which could lead to high variance in the quality. Also, the quality would deprecate over time if appropriate actions are not taken for upkeeping the partner's competence.

From the gathered data, two main quality factors were identified that could positively affect certification. These are ISVs overall quality level and quality requirements from the customer. Quality, in this case, would mean how well the system should be configured, and features utilized, for the solution to fit customer's needs and to enable good maintainability. Having a partner that does implementation will present a risk in terms of quality. A partner could, for example, seek to lower their costs by taking shortcuts in implementation which later would prove to be costly in support phase. This would be especially problematic if ISV is responsible for the end customer support and partner isn't. Sufficient mitigation mechanisms need to be taken for addressing that kind of opportunistic behavior.

Quality issues could happen also because of lack of knowledge that could be framed as a lack of training as well. Certification could be used as one tool to address the training issue. A certification would give a structure (MSV, 2016) for the training and ensure that the partner knows at least certain things about the product (MP, 2016). This would help to ensure that partners are trained systematically and there wouldn't be knowledge gaps, e.g. because partner manager simply forgot to teach something (BSV, 2016). Better training should thus lead to better quality, and certification could potentially help to approach it in a systematic manner. It might also help to ensure that enough time and resources are allocated for the training which helps to ensure the training quality.

As mentioned in the literature review, certification is not only about certifying people and their competence – also products can be certified, e.g., with a model described by Heck, Klabbers and van Eekelen (2010). If the product certification idea is observed from a quality perspective, there is a possibility the ISVs could have their own certification program for the end solution. In the case of partners, it could mean that the end solution is not accepted by the support phase, or partner doesn't get certain revenue share (MP, 2016), before certain quality criteria are met, i.e., it is certified. The criteria could consist of certain automatic checks to pass (e.g. data validation and no error logs), appropriate documentation to be in place, and some manual checks. This would help to ensure that the partners follow the quality level ISV aims to.

As with training, there is also a cost related to the quality perspective of certification. The cost is the additional effort required to do the necessary measurements, or the costs of failure and rework due to bad quality. In other words, the overall cost component is the cost of quality (Feigenbaum, 1991). The key quality related question for ISVs participating in partnerships seems to be "*How will ISV ensure the quality?*" The summary of the quality related findings is presented in Table 13.

Table 14. Affecting factors and key questions in partnerships from quality perspective

Affecting Factors	**Key Questions**
Software vendor quality level Requirements from customer Cost of quality	How will ISV ensure the quality?

Governance

Third major theme relevant for certification was governance. Governance overall is important in partnerships which were also highlighted in the interviews. MP (2016) mentioned that one way to motivate, or force, partners to get the certificate would be to tie it to the commission they get. SSV (2016) on other hand mentioned that certification process could be used for filtering the partners. By putting the partners through a certification, a software vendor could screen which partners are really interested instead of them just getting a "reseller" status for free. This kind of commitment aspect was also pointed out by MSV (2016). In addition to that, the interviewee mentioned that certification would act as a measure of competence for the partner's management. And for the software vendor, certification would help to give a structure for the partner program and it would provide clear roles and learning paths for the partner. BSV (2016) on other hand raised the issue of variance in the training and lack of follow up which could be potentially solved with appropriate governance.

From certification perspective, the first major factor that seems to affect the implementation of certification is the partnership model the ISV uses. As certification requires a certain amount of effort, it should be done to those partners where it adds enough value to compensate the costs. If this is reflected to the four partnership models, the value-

added reseller is one group where certification could clearly fit. For example, in a co-selling model where the cooperation might not be that systematic, it might not make sense to certify the partner. This inference is based on the evidence that there seemed to be a consensus among the interviewees that technical training is needed but it was not clear if sales persons should attend a training or certification even though the risks and issues were mentioned (MP, 2016; MSV, 2016; BSV, 2016). Certification's position in OEM relationships didn't become clear.

Another affecting factor is the quantity of the partners. As pointed out by SSV (2016) it doesn't make sense to have a certification program if there are only couple partners apparently because of the costs of creating and managing the program. SSV (2016) also pointed out that when there starts to be a lot of partners, certification could be used as a filter for seeing who can actually commit to the relationship. In software ecosystem literature, this was described as an entry barrier. By adjusting the entry barriers appropriately ISV could control which companies join their ecosystem. However, ISVs should carefully consider which kind of implications this has as for example MP (2016) already suspected the value of the certification for the partners so by setting even small entry barrier could easily filter out many potential partners. Reflecting the formal control methods, certification here acts as an input control.

Certification can be potentially used for ensuring and upkeeping the training and quality. First of all, having a systematic checklist or program should help to reduce the variance within those both dimensions by giving a structure MSV (2016), helping to ensure appropriate resources and cover necessary aspects BSV (2016). The variance reduction effect of certification was also recognized by Wareham, Fox and Giner (2014) when they studied different software ecosystem governance mechanisms. The structure certification gives can be in the form of roles, responsibilities, and learning paths. It will help to assess easily the competence of partner's employees which not only helps ISV (MP, 2016) but also the partner by reducing the uncertainty involved (MSV, 2016) and, thus, lower the transaction costs. The main usage of a certification here would be a process (i.e. behavior) control or output control. Process control in a sense that ISV could require a partner to go through certain training and make sure necessary subjects are covered,

and output control in a sense that the partner can be tested that they learned what was taught.

Having a certification program might require having incentives for the partner. This was mainly pointed out by MP (2016) who mentioned connecting it to the commission partners get. Also, SSV (2016) mentioned that after having a Microsoft certificate they could get certain software significantly cheaper and the savings clearly out weighted the costs. The bigger software vendors have levels in their partnership program which also means levels in the certification. Roughly it means that the more control and monitoring you give to the software vendor, the more benefits you get (Wareham, Fox and Giner, 2014). That helps the software vendor, for example, to concentrate on the most important partners.

One aspect that is expected to have a significant impact on the decision of certification implementation is the governance mode selection by the ISV, i.e., selection of formal and informal controls. As discussed in the chapter 3.2.3 “Theoretical Perspective to Certification”, a company can utilize contractual governance methods or relational governance methods from which certification falls mainly into contractual governance. So, if company tends to lean towards formal controls, it might be possible that they tend to use certification more often than those who emphasize informal controls. Also, the type of value chain they are part of will most likely have an effect on certification implementation as it affects the governance type as well (Gereffi, Humphrey and Sturgeon, 2005) not even to mention other environmental aspects (Cao and Lumineau, 2015; Jaworski, 1988).

The main governance-related costs about certification discovered could be categorized as “managing costs of the certification program”. This includes basically four things: creation costs, upkeep costs, operational costs, and possibly termination costs. These weren’t explicitly mentioned by the interviewees but literature had a few mentions about these aspects. The creation costs would include all necessary work needed for creating the program such as creating appropriate measures and thinking how it would

be implemented. Also, if new software or equipment is needed then purchasing or creating those are included as well. Upkeep costs are necessary action or equipment maintenance required for keeping the program up-to-date and functional. This could potentially be rather costly if the industry tends to be evolving with a fast pace. The actual operational costs related to certification are discussed in training and quality chapters but these should be considered when designing the certification process. Termination costs are costs related to terminating the certification program or partner not renewing their certificate. These should be considered especially if the certificate is used in external marketing in the case of which negative publicity could be one issue (Nwankwo, 2000).

Based on the empirical data the main questions from where ISVs can start to approach governance aspect in partnerships are "*How will ISV make sure the partner is and stays competent?*" and "*How can ISV ensure smooth collaboration?*" The summary of the governance-related findings is presented in Table 15.

Table 15. Affecting factors and key questions in partnerships from governance perspective

Affecting Factors	**Key Questions**
Partnership models Quantity of partners Ensuring and upkeeping training and quality Entry barrier Formal vs. Informal control Managing costs of certification program	How will ISV make sure the partner is and stays competent? How can ISV ensure smooth collaboration?

Marketing

Fourth and the last major theme connected to certification was marketing. This was emphasized especially in the literature but it wasn't that explicit in the empirical data. MP (2016) was concerned about how partner's sales people are able to deliver correct message to the customer. SSV (2016) had a partnership with a widely-known consultancy

company which had improved SSV's credibility. SSV didn't mention any marketing related benefits associated with their Microsoft certificate, though. MSV (2016) was concerned about how would partners affect their reputation and the partner had to be certified to sell. Also, marketing their own company to the partners were implicitly discussed as having a well-structured partner program would help to convince the partner to start the partnership. BSV (2016) mentioned that certain marketing related actions would be important to have as a part of the ramp-up program. He also mentioned that certification would bring a lot of value for the partner in the markets where there is a lot of demand and only a few suppliers. This was interpreted so that it can be used as very effective marketing tool by the partner.

First, marketing related factors were looked into which could positively affect the implementation of ISV's certification program. Seems that quality signals selected by ISV and partner play a role here. Dewally and Ederington (2006) categorized quality signals into four groups reputation, warranty, certification, and information disclosure. By using on or more of these ways the seller can signal to the customers that their product or service is high quality, thus, reducing the transaction costs (mainly the risk) for the customer by reducing information asymmetry. The interviewee from MP (2016) gave an example of the signaling by mentioning when one of their prospects had some doubts about the MP, he asked a person from ISV's side to join the next customer meeting. That relieved the customer doubts. The signaling strategy used here can be thought as a certificate (person from ISV assures the partner fulfills the requirements of being competent) or information disclosure (person from ISV reveals additional information about the services or product and the partner). MSV (2016) also described similar kind of signaling process:

> *"They [customer] don't really ask about certifications, but instead, they want to see the previous customer references - what the ISV and the partner have done together. A certificate doesn't tell much."*

Based on the above description, customer references seem to act as an information disclosure mechanism which acts as a substitute to certification. Dewally and Ederington

(2006) also discuss the substitution. They found out that in the absence of certification, warranties and reputation might matter much more, but if certification scheme is available the buyers might question why the seller hasn't acquired it. Thus, one of the key decisions software vendors face might be the selection of appropriate quality signals which will impact whether certification program is implemented or not.

It is possible that there is a certain amount of variance between different types of software vendors when it comes to signaling strategies. As this study's empirical data is gathered only from ISVs, their specific requirements are emphasized. However, if the view is extended to other types of software vendors, such as those who develop customer specific software, then the signaling strategies probably differ. For example, ISV could offer trial periods (information disclosure) while that is not possible for a software vendor who develops customer specific software since the software hasn't been developed yet.

Another factor that was found relevant in terms of certification was country. This was pointed out by MSV (2016) and BSV (2016). More specifically it seems that in certain countries the certifications are used more frequently which is an indication for ISVs to consider providing a certification program for partners in those countries. Countries raised by the interviewees were China (MSV, 2016), India (BSV, 2016), and USA (BSV, 2016). It must be pointed out though that MSV (2016) mentioned that even though doing business in China requires additional bureaucracy and permissions, the customers tend to ask about the customer references as well. Another note made from the empirical data was that industry could be one factor that affects the usage of certificates as well. This inference was mainly done since MSV (2016) operated on a regulated market. Similar moderating effects of countries (more specifically legal systems, power distance, and collectivism) and industries (manufacturing and service) was observed by Cao and Lumineau (2015).

Potentially the main cost element from a marketing perspective was the reputation costs. This would contain costs related to building up the reputation, maintaining it and risks related to reputation. This concerns not only certification but partnerships overall.

As the partner represents the ISV on a certain market it implies a risk that partner could have a negative effect on the ISV's reputation (MSV, 2016). Also if the partner is the main responsible of doing sales they could lose a prospect by not being able to point out the value of the software to them (MP, 2016). A certificate could potentially strengthen the association between the ISV and the partner but it also creates a new cost element "certification program reputation". The certification program would require internal marketing and its value has to be shown before it is accepted within the company. This component can be illustrated by comparing the skeptic opinion of MP (2016) to the positive opinion of MSV (2016). It is expected that there is a similar variation within the partners and assuring them of the value of the certification program requires effort.

Based on the above discussion and gathered data is seems that the key question in partnerships from a marketing perspective is *"What message is delivered to the customer and how?"* This would be essential especially for sales, but concerns also the delivery and support phases. On even a broader scale the question could even be rephrased as what is the design of the service process and how the customer experiences it? When it comes to certification, while ISVs formulate an appropriate answer to the question they should take into account different signaling strategies and evaluate the need to take into account country and industry differences. It is expected that while doing those the position of possible certification program will be clarified. One especially valuable approach would be to ask directly from the partners what do they think about certification. The importance of partner's value was pointed out explicitly by MP (2016), MSV (2016) and BSV (2016). The summary of the marketing related findings is presented in Table 16.

Table 16. Affecting factors and key questions in partnerships from marketing perspective

Affecting Factors	Key Questions
Quality Signals Country, Industry Reputation Costs	What message is delivered to the customer and how?

6 Conclusions

In this study, investigation was made into what kind of sales partners does independent software vendors have and what kind of partner certifications they use. Data was gathered from one micro sized partner and three different sizes of ISVs.

6.1 Independent Software Vendor's Partnership Models

The first research question was "*what types of partnership models are used by independent software vendors in software sales?*" (RQ1) It was found out that for small to large sized ISVs there seem to be four dominant types of partnership models. These are co-selling model, sales agent model, value-added reseller model, and OEM model (Figure 14). In a similar manner, the partners in these models are called as co-seller, sales agent, value-added reseller, and OEM partner. Their main differences are their roles and responsibilities in the partnership, varying from rather shallow (co-selling) to very deep models (value-added reseller and OEM). One of the factors that separate them from each other is the amount of end customer control they have.

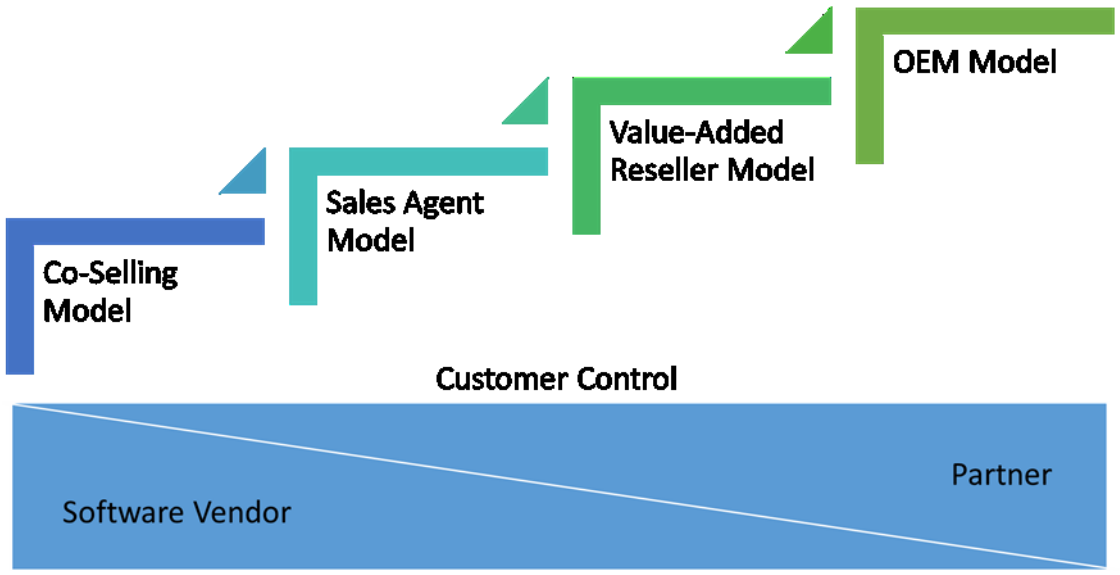

Figure 14. Four Partnership Models

6.2 Certification Models Used by Independent Software Vendors

The second research question was "*what types of certification models are used by independent software vendors?*" (RQ2) Even though literature has concentrated on third-party certifications, mainly ISO series, the findings suggest that those aren't used by medium sized independent software vendors. The main certification model, if any, are second-party certificates, i.e., vendor-specific certifications. Rather often they mentioned partner or plugin certificate with big global software enterprises, but two of the case companies also had an own certification program for their partners. The conclusion was that medium-sized independent software vendors use partner certifications from big software enterprises and under certain conditions they have their own certification program.

6.3 Factors Affecting Certification Program Implementation

The third research question was "*what factors affect the independent software vendor's decision on implementing a certification program?*" (RQ3) This was approached by exploring certification from four different perspectives that were the focus areas in literature and in the empirical data. These were training, quality, governance, and marketing. From each of the focus areas, the most relevant factors were pointed out that can affect ISVs decision on implementing their own certification program for sales partners. These factors are shown in Table 17 and those are discussed in chapter 5.2.2.

Table 17. Factors which can affect ISV's decision on implementing a certification program

Training	Quality
Product and service complexity	Software vendor quality level
Product portfolio width	Requirements from customer
Cost of training	Cost of quality

Table 17. (continued) Factors which can affect ISV's decision on implementing a certification program

Governance	Marketing
Partnership models	Quality Signals
Quantity of partners	Country, Industry
Ensuring and upkeeping training and quality	Reputation Costs
Entry barrier	
Formal vs. Informal control	
Managing costs of certification program	

6.4 Partner Certification in Medium-Sized Software Company

Our research problem was "should medium-sized independent software vendor certify its partners and how?" (RP) There isn't a simple answer for that as it seems to heavily depend on the context. By evaluating the given factors (Table 17) within a specific context ISV operates in, an ISV can arrive at an answer if certification is something they find beneficial. For further facilitating this evaluation, key questions in partnership were formulated for each of the perspectives (Table 18). ISVs can use these as a starting point for creating appropriate partnership operations and seek the answer to *should* they implement a certification program, and *how* it should be done.

Table 18. Key questions in partnerships from the four perspectives of certification

Training	Quality
How is the training arranged?	How will ISV ensure the quality?

Governance	Marketing
How will ISV make sure the partner is and stays competent? How can ISV ensure smooth collaboration?	What message is delivered to the customer and how?

6.5 Managerial Implications

This study offers managers a starting point for creating a partnership model that suits their needs. Four types partnership models were identified that are used by independent software vendors. These are co-selling model, sales agent model, value-added reseller model, and OEM model. The results suggest that these should be treated separately and partner's roles, responsibilities, and governance structure for the partnership should be different in each of the models.

When designing operations with partners it is valuable to start with thinking the partnership lifecycle. The stages of the lifecycle from an operational perspective (which however weren't discussed in this study) could be separated for example into ramp-up, continuous operations, and termination. Each of these stages has their own distinct characteristics and priorities. For observing and designing these stages the four perspectives discussed in this study were proposed: training, quality, governance, and marketing. As an example, in the ramp-up phase training aspect might be emphasized in the form of knowledge transfer to the partner, while in termination the governance related aspects such as redefining the roles and responsibilities of different actors could be a central theme. In order to ensure good operations with partners and reduce the risk, the key questions (Table 18) can be used to think through each of the partnership stages.

When it comes to medium sized companies resource scarcity is likely to be one of limiting factors in partnerships from both sides. This quickly leads to the situation that it is not feasible to upkeep heavy control or monitoring structures towards partners including certification. Moreover, the effectiveness of certain controls especially certification is not clear and will most likely depend heavily on the context. Any company who starts to work with partners should begin with basic operations without the certification. Later, if seemed valuable, certification program can be added. Potential risks of implementing certification program at the beginning are that a lot of resources are spent on it, and it might not deliver the value that was expected from it.

Certification should be thought as a tool that can be used to control, verify, or assure certain aspects of a partnership. Certification can be used to ensure that partner has

taken appropriate training and understood those. Certification can be used to control quality for example by setting certain quality criteria for project delivery team or the end product that the partner delivers. Governance perspective is wider where certification could be a signal for the partner's management about the competence to deliver, or periodic renewals of certification could ensure that partner's competence is upkept. From a marketing perspective, official recognition of partnership (i.e. partner certificate) can be required in some countries in addition to which partners can use the partner status in their marketing message.

Even though there are a variety of ways to use certification there seems to be also alternative ways of achieving the same things. One of the most powerful substitutes being a customer reference. A happy customer with the successfully delivered project can be used in a similar manner as a certificate – it proves the partner understands the ISV's software, well-functioning software is a proof of quality, and customer reference can be used in marketing. The main benefit of thinking customer reference as a certificate is also its minimal, or non-existent, overhead on top of normal project delivery. Companies should first evaluate "customer reference as a certificate" philosophy after which, if they still see value in certification, consider implementing it.

6.6 Reliability, Validity, and Limitations

Reliability in case studies means that if other researchers follow the same procedures and conducts the same case study over again, they should arrive at the same findings and conclusions (Yin, 2013). The main effort for improving the reliability in this study was the documentation of the research methods including the interview template (Appendix 1) and using multiple data sources in the analysis. Multiple data sources included the literature, and four case companies which all were different sizes of companies and targeted different industries. The main limitation is related to the "ground up" analysis strategy (Yin, 2013) used to process the data. More specifically, even if other researchers would also transcribe, tag, and categorize the interview data, they might arrive on different kind of perspectives than the same four discovered in this study. However, it is expected that the results would be at least partially the same since certification is strongly related quality and governance which was clearly pointed out in literature and

the empirical data. For increasing the reliability, the case narratives could have been shown to different people and feedback could have been collected about their interpretations before showing the results.

Two kind of validities should be evaluated in exploratory studies: construct validity and external validity (Yin, 2013). Construct validity tells how well the operational measures the concepts that are studied. The main operational measures for partnership models were the "type of partner" and the "responsibilities of the partner". These two seemed to be rather clear for all the interviewees. The operational measure for certification was term "certification" (see the interview template in Appendix 1). The main issue with this measure was that it was not entirely clear what it consists of. For example, in literature review chapter (see chapter "Partner and Supplier Certification") it was pointed out that some authors have referred certification as "*a long-term supplier development program*" which clearly diverges from the definition (chapter 3.2.1) we have used. Similar kind of ambiguity was also observed from the empirical data by MSV (2016) mentioning that "The meaning of certification depends a bit of the software vendor. The main purpose is that certain amount of confidence is achieved." This suggests that certification should be viewed in the context of achieving confidence instead of it simply being a process which verifies and grants a written assurance. Relevant questions for the interviewees could be then e.g. "how do you achieve confidence in partner's skills?" instead of "does your partners have certificates?" The operational measure should be on the amount of confidence and how it is achieved instead of a piece of document.

External validity defines the domain in which the results can be generalized (Yin, 2013). As this study concentrated only to independent software vendor of different sizes. More specifically only four interviews were made from which one of the companies can be labeled as a "pure partner", i.e., it did not have its own software product. The other three interviews were done from ISVs which delivered software mainly via SaaS model. The limitation is that the perspective of those companies who make tailored software is excluded limiting the generalizability to only ISVs. For establishing better external valid-

ity further case studies could be conducted on software vendors in general and on companies in different countries. Also, different people in different positions could be interviewed as this study focused only to people in leading positions.

6.7 Suggestions for Future Research

This study contributed to literature about certification. The study focused on certification in medium sized independent software vendors. Several relevant factors were discovered that potentially affect the certification implementation and four central perspectives to the partnerships were discussed. However, the sample size of the study was rather limited and therefore further study is needed for discovering the relevance of each of the factors. Future research could investigate (a) are the factors and perspectives relevant to other software companies, and (b) to investigate the importance of each of the factors. Answering these two should help to further clarify which aspects are the main drivers for software companies to implement their own certification program. Also, the comparison of independent software vendors to those software vendors who make customer specific software could provide extra insight into the dynamics and reasons of certifications in a theoretical context.

Further study should also be made on how partners and the end customers perceive the certification. As this study focused mainly on the software vendor perspective, adding other perspectives would help to validate the results and gain extra insights. Also, adopting multiple perspectives and comparing them could prove to be valuable. This kind of approach was taken by Niu (2009) when studying the relationship management of value-added resellers.

One of the interesting discoveries made during the study was that certification can have certain substitutes. These were discussed mainly in conjunction with quality signals (Dewally and Ederington, 2006). Further studies could seek to discover what kind of other substitutes exist by looking at certification from different perspectives such as those four discussed in this study. This could be approached for example by investigating what kind of trade-offs companies have to make when formulating their partnership models and what kind of different options they have for solving some of the problems in partnerships such as quality monitoring.

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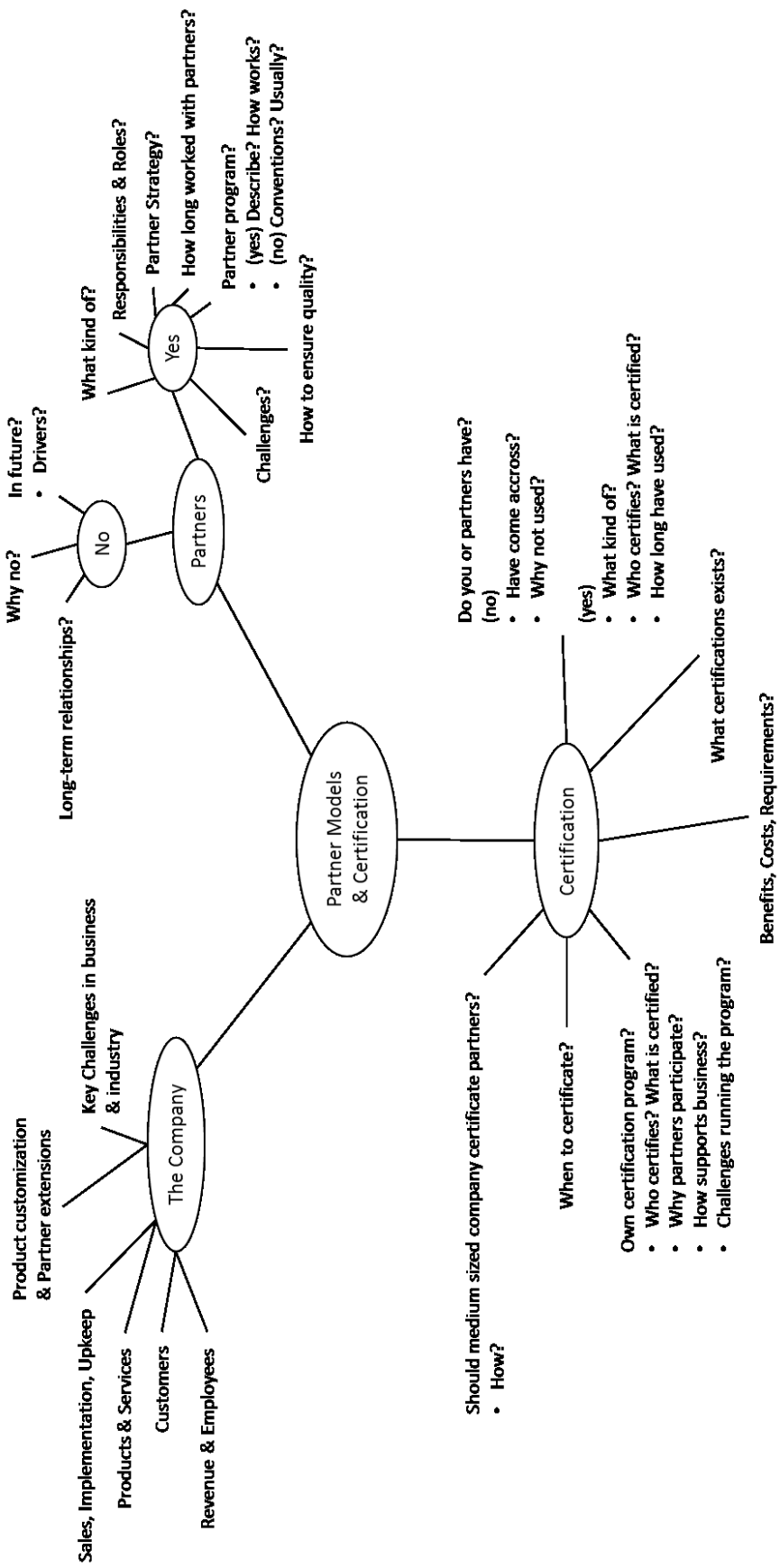
Appendices

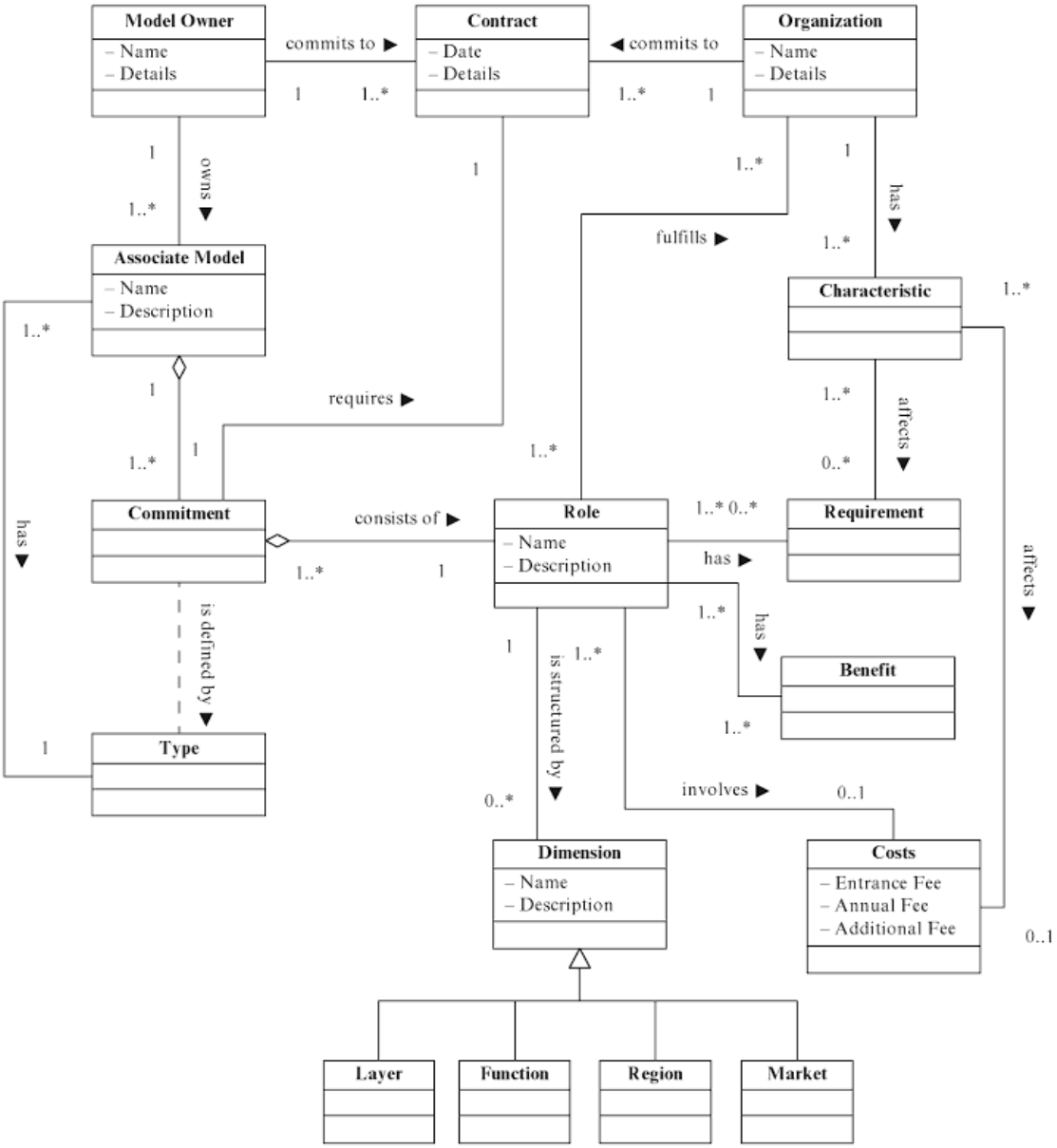
Appendix 1. Interview Template. 1 page.

Appendix 2. Conceptual Overview of an Associate Model. 1 pages.

Appendix 1. Interview Template



Appendix 2. Conceptual Overview of an Associate Model



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